A **report** on PFI and the delivery of public services

Quantifying quality

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PFI and its role in the delivery of public services

chapter one

Introduction

The private sector has always provided goods and services to the public sector. Private infrastructure provision is not a new idea. For instance, bridges have been privately owned for centuries.

However, a widespread feature of the last two decades has been the shift away from the in-house provision of services by the public sector towards the contracting out of services to be provided by the private sector. These services are both a contribution and an addition to the provision of services by the government to the public, but the services are supplied by the private sector. Toll collectors, prison officers, teachers, hospital administrators and cleaning staff are all examples of private employees providing virtually identical provisions to those provided traditionally via the public sector.

Growing anxiety over state budgetary deficits and concerns over the inability of the public sector to manage complex infrastructure efficiently in an increasingly competitive environment, has led to the reversal of state ownership as the norm for providing infrastructure to the public at large.

In the UK this process started in the 1980s. Between 1970-1996 large reductions in government investments were observed in OECD countries. Privatisation and public-sector expenditure constraints had given rise to a substantial reduction in private and public sector investment. So, in order to achieve infrastructure development and to reduce the associated burden of government debt the public authorities and national governments sought to involve private capital to implement design and build infrastructure projects and to provide infrastructure services previously in the domain of the public sector.

As part of this trend of using private capital for the provision of public services in infrastructure projects, the Private Finance Initiative (PFI) was launched in 1992, as a legal framework for concessions in the UK to encourage private capital investment in the construction industry. In the PFI framework the public sector defines the output specification for the services to be purchased from the private sector with a predefined payment mechanism. The public purchases a service not an asset.

After 1997 and the change of government from Conservative to Labour, PFI gained momentum in the UK and it is now widely expected to continue expanding as a procurement instrument in the future. In the PFI framework, the public sector becomes the procurer and regulator of services but not the provider. In the case of private provision of infrastructure services, the public sector only pays for the service received and only if the service meets the predetermined output specification.

The background of PFI in the UK

The PFI strategy arose in the context of the economic stagnation witnessed since the 1960s and the expanding deficits that concerned the incoming Thatcher government which came to power in 1979. The Conservatives championed leaner and smaller government and Thatcher stated that a primary aim of her government was to roll back the frontiers of the state and allow more direct private sector involvement in the provision of public services.

From 1979 onwards the UK Government introduced privatisation and compulsory competitive tendering for local authorities. The administration of John Major continued the policies of downsizing the public sector through deregulating and introducing market principles into public services, reorganising government functions into agencies, introducing the Citizen's Charter and promoting market testing in which the private sector competes with public services. The underlying objective of these policies was to shift the paradigm of government from public administration to public management. PFI is an extension of this policy and its real aim is administrative reform and to transfer much of the public sector's role to the private sector.

The following timeline details the development of PFI since 1977:

1977: Prior to 1977, all the capital expenditure of nationalised industries and public corporations was accounted and recorded within total public expenditure and thus contributed towards the Public Sector Borrowing Requirement (PSBR) – the amount of money the government needs to borrow to meet its spending plans, even when wholly financed from internal resources derived from user charges . The 1977 paper on the redefinition of public expenditure and the 1978 White Paper on nationalised industries switched the focus of government to the External Financing Limit (EFL) – the cash limit of external financing.

1979: The Conservative Party came to power in the UK and a strict policy of reducing public expenditure was put in place.

1981: During the recession of the early 1980s there was much public debate as to whether restrictive EFLs (designed to hold down the PSBR as a means of controlling monetary supply growth) were frustrating profitable nationalised industry investment and thus needlessly exacerbating the recession. In a review of the extensive debate on EFL, The National Economic Development Council (NEDC) formulated the Ryrie Rules. Under the chairmanship of Sir William Ryrie, the then second Permanent Secretary to the Treasury, the rules sought to establish criteria under which private finance could be introduced into the nationalised industries. The Ryrie Rules stated that:

- Decisions to provide funds for investment should be taken under conditions of fair competition with private sector borrowers; any links with the rest of the public sector, government guarantees or commitments, or monopoly power should not result in the schemes offering investors a degree of security significantly greater than available on private sector projects
- Such projects should yield benefits in terms of improved efficiency and profit from the additional investment commensurate with the cost of raising risk capital from financial markets (HM Treasury, 1988).

The Ryrie Rules were revised in February to take into account the privatisation of previously nationalised industries and the introduction of, for example, contracting out, mixed funding and partnership schemes.

The two fundamental principles of the guidelines were:

- Private finance could only be introduced where it offered cost-effectiveness (projects must be tested against the equivalent competitive price market)
- Privately financed projects for public sector programmes had to be taken into account by the government in its public expenditure planning (HM Treasury, 1992).

1989: In a speech to the Institute of Directors in May 1989, John Major, the then Chief Secretary to the Treasury, formally retired the Ryrie Rules on the grounds that they had outlived their usefulness, were seen as incomprehensible, and set impossible hurdles . This move was intended to further encourage 'the private sector to bring forward schemes for privately financed projects, which offer value for money for the user and the taxpayer'. The Ryrie Rules were abolished in 1989 and were followed in 1992 by the launch of PFI.

The launch of PFI in the UK

1992: PFI was formally launched in the UK by Norman Lamont, then Chancellor of the Exchequer, who stated in his 1992 Budget Statement that: '...the government has too often in the past treated proposed projects as either wholly private or wholly public. In future, the government will actively encourage joint ventures with the private sector, where these involve a sensible transfer of risk to the private sector...Thirdly, we will allow greater use of leasing where it offers good value for money. As long as it can be shown that the risk stays with the private sector, public organisations will be able to enter into operating lease agreements, with only the lease payments counting as expenditure and without their capital budgets being cut.'

The aim of introducing PFI was to achieve closer partnering between the public and private sectors at both central and local government levels. The intention was to increase the flow of capital to projects against a background of restraint on public expenditure by utilising private sector money and management skills. It was also intended to offer real benefits to the private sector in the form of increased business profit.

The guiding principles of PFI are similar to those underlying the Ryrie Rules: ventures established under PFI need to achieve a genuine transfer of risk to the private sector and value for money in use of public resources. It is intended to transform government departments from being owners and operators of assets into the purchasers of services from the private sector. In PFI procurement the public sector specifies its services by way of an output specification covering the objectives, purpose, scope and performance requirements for the contract, with emphasis being on the 'what' and not the 'how' in relation to the service provision.

The 1992 Budget Statement contained 'important changes' to the rules governing the use of private finance by public sector organisations. In short, the issues identified as fundamental to policy evaluation were: modifications to the value for money criterion; 'additionality'; measurement of efficiency gains and additional financing costs; and determining whether risk has been transferred.

HM Treasury noted in 1993 that, 'PFI, unlike the earlier policies of privatisation and contracting out, is based on an enterprise and discipline [that] can bring gains in efficiency and reduction in costs and is stimulated by the government keeping inflation down and getting public finances back on the right track.' Within this statement the Treasury claimed the following main issues:

- PFI can bring gains in efficiency
- PFI can bring inflation down
- PFI can limit public sector spending
- The public sector's need for capital expenditure (private financing of capital projects).

PFI is not about borrowing money from the private sector. It is supposed to be about creating a structure in which improved value for money is achieved through private sector innovation and management skills delivering significant performance improvements and efficiency savings.

Under PFI, governments no longer build roads but purchase miles of maintained highway; governments no longer build prisons but buy custodial services. What makes PFI different is that the public sector retains a substantial role in PFI projects and the private sector provides capital assets as well as the services. Increasing levels of partnering with the private sector have evolved and, by this partnering agenda, the public sector receives the benefit to increase its efficiency through the introduction of managerial change and expertise drawn from the private sector.

There is always confusion between PFI and PPP. PFI is a public service delivery type of PPP where responsibility for providing public services like transportation, sanitation, etc is transferred from the public to the private sector for a considerable period of time. PFI is therefore a generic classifier for all types of 'construction' PPP. The whole concept of PFI is a government policy to tackle financial problems in facility provision and integrate private management skills to increase efficiency, effectiveness and quality. The level of private sector involvement might range from a service provision, without recourse to public facilities usage, up to public facilities ownership.

Construction PPP (PFI) can be categorised as follows:

- Service contracts – where the private sector alone contributes to the service, without further government capital input. The contract arrangements are: operation and maintenance; design and build; and turnkey contracts
- Service contract based on public facilities – this group is characteristic of the private sector operating the facilities. The procurement methods could be design-build-finance-operate (DBFO); and lease-develop-operate (LDO). This group also includes build-operate-transfer (BOT) and build-own-operate-transfer (BOOT)
- Private sector permanent provision – these include build-own-operate (BOO); buy-build-operate (BBO) or privatisation
- Special vehicles/joint ventures (JV) – these are equity JV, cooperatives and consortia. The private and public sectors share the liability and return from the same JV company.

From the perspective of risk allocation, PFI projects are classified into three types:

- The financially free-standing type where risk is fully transferred to the private sector (for example, toll bridges)
- The joint venture type where risk is fully transferred from the public sector with some public sector cash contribution (for example, urban regeneration schemes)
- The type of services sold to the public sector where risk is shared rather than fully transferred (for example, DBFO road projects).

There are two fundamental characteristics of PFI projects:

- There must be a genuine risk transfer to the private sector
- The project must provide value for money to the taxpayer.

The premise is that the transfer of risk to the private sector, coupled with the efficiencies in management skills will outweigh the higher costs of private funding, resulting in greater value for money to the taxpayers.

The evolution of PFI in the UK

Changes introduced 1992-97

1993: The private sector showed little interest in the 1992 Budget Statement. The subsequent Chancellor of the Exchequer, Kenneth Clarke, in his 1993 Budget Statement gave PFI a greater impetus by announcing that a new Private Finance Panel would be created and its role would be:

- To encourage greater participation in the initiative by both the public and private sectors
- To stimulate new ideas
- To identify new areas of public sector activity where the private sector could become involved
- To seek solutions to any problems that might impede progress.

1994: Kenneth Clarke ensured engagement with the private sector by making plain that the Treasury would not approve any capital project unless options to secure private finance had been explored. It became mandatory that all capital projects in the public sector that required Treasury approval would explore private-finance options.

1996: The 4Ps (Public Private Partnerships Programme) was established in April by the Local Authority Association of England and Wales to promote PFI in the local authority sector with the express aim of bringing about increased investment in local services through PFI and other public/private sector partnerships.

Changes introduced from 1997 onwards

1997: PFI was the Conservative Party's approach to financing and managing an upgrade of Britain's 'social infrastructure'. With the election of Labour in 1997, the new government continued to back the concept under the PPP banner.

In May Geoffrey Robinson, then Paymaster General, announced that Sir Malcolm Bates was to conduct a speedy review of the PFI process. He also announced an end to universal testing – the rule that capital projects had to be tested for private finance potential. The first Bates Review reported on 26 June 1997, outlining 27 recommendations to streamline and improve delivery of PFI projects. One consequence was the creation of a PFI Taskforce inside the Treasury to help foster PFI expertise within government.

The Treasury Taskforce was established in September 1997 as the focal point for PFI activity across government. It concentrated on a number of significant projects, helping departments to set priorities while trying to ease negotiations and gain value for money. The Taskforce published a series of guidance documents, policy statements, technical notes and case studies.

1999: The second review of PFI by Sir Malcolm Bates was published in July. Its recommendations concentrated on institutional change and government plans for taking the recommendations forward. It also pointed to the following areas of weakness:

- Strategic planning
- Project management
- Negotiation skills
- Financial disciplines
- Management of long-term contracts.

Bates also identified three alternative institutional arrangements following the expiry of the taskforce:

- Extend the life of the taskforce
- Create a public sector, fee-earning agency; or
- Set up a new Public Private Partnership.

Bates recommended that a permanent organisation, Partnerships UK, be formed to replace the Taskforce.

Peter Gershon was invited to review 'civil procurement in central government' in the light of the government's objectives on efficiency, modernisation and competitiveness in the short and medium term. Gershon examined the whole process of acquisition from third parties by government. The acquisition process spans the whole life-cycle from initial inception through to the end of the useful life of the asset or the completion of the contract. In his July review, Gershon identified a number of weaknesses in government procurement which cover:

- Organisation
- Process
- People and skills
- Measurement
- Contribution of the centre of government.

Gershon's proposals for dealing with these weaknesses led to the creation of a central organisation called Office of Government Commerce (OGC). The first edition of Standardisation of PFI Contracts was produced in July 1999 (SoPC, 1999). Its aims were to:

- Provide guidance on the key issues that arise in PFI projects in order to promote the achievement of commercially balanced contracts
- Enable public sector procurers to meet their requirements and deliver best value for money.

The three main objectives of the first edition were to:

- Promote a common understanding of the main risks encountered in a standard PFI project
- Allow a consistency of approach in pricing across a range of similar projects
- Reduce the time and costs of negotiation by enabling all parties concerned to agree a range of areas that can follow a standard approach without expanded negotiations.

2000: Gershon's (and therefore the OGC's) aim was to modernise procurement throughout government, provide a greater sense of direction in procurement and promote best practice in the public sector. In his proposal, government departments would need to work more closely with the OGC and in some cases accept some loss of sovereignty in procurement matters, on the understanding that this would deliver better value for money for government.

Partnerships UK, launched in June, replaced the projects arm of the Treasury Taskforce to work with both public and private bodies on specific PPP transactions to improve the process planning, negotiation and completion of PPPs. With a board comprising members of both the private and public sectors, the aim of Partnerships UK was: 'to deliver better value for money by working on the side of the public sector'. For a particular project, it would align itself with the public sector procuring authority and inject more detailed examination of practical considerations into the decision-making process and drive forward the conclusion of deals. By doing this it was supposed to help departments and other public sector organisations make a better job of procuring PFI deals.

The strategic objective of Partnerships UK was to create a catalyst to achieve quicker and better value for money PFI and PPP deals which, by mobilising private sector skills in service of the public interest and easing the financial constraints on public sector procurers, would enhance the flow of investment into the nation's infrastructure. Partnerships UK was supposed to work in close conjunction with the OGC, while the Taskforce would continue as a part of the OGC.

2001: In March, Partnerships UK became a Public Private Partnership in its own right following the sale to private investors of a 51% stake, with 49% being retained in public hands.

2002: In July, the second edition of Standardisation of PFI Contracts was produced as OGC Guidance. The revised second edition sought to clarify, enhance and re-balance the guidance in the light of the public and private sectors' experience of the guidance over the past three years. The most critical changes were: refinancing, compensation on termination, and insurance issues.

2003: Until April 2003, the Private Finance Unit (PFU) within the OGC had responsibility for developing and promoting PFI policy for public bodies. In March 2003 Justin Slater, Head of Private Finance Policy and Practice at the OGC, announces that an 'expanded HM Treasury PFU under the leadership of Geoffrey Spence will now carry out all those responsibilities presently carried out by the OGC PFU.' The responsibilities transferred included:

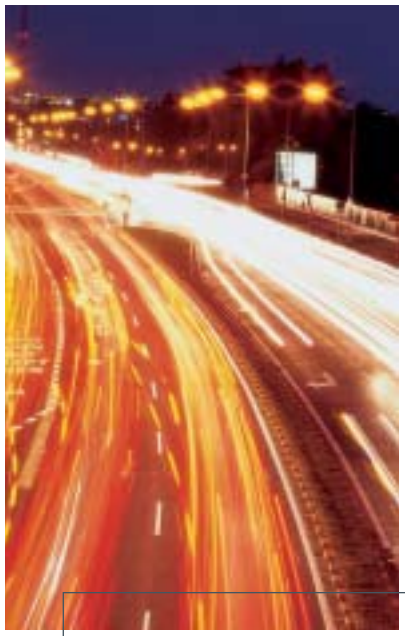
- Ministerial and parliamentary business on generic PFI policy matters
- Ownership of standardisation of PFI contracts-written guidance for authorities on how to agree PFI contacts
- PFI statistics disclosed to Parliament
- Ownership of the Project Review Group Secretariat – the process by which projects are reviewed when there is a full business case to consider
- Single point responsibility for managing the government's framework agreement with Partnerships UK.

In line with policy changes, Gus O'Donnell replaced Peter Gershon as the officer in charge of PFI policy.

2004: In April, the third edition of Standardisation of PFI Contracts was produced by HM Treasury. The following assumptions are implicit within the guidance:

- The party contracting with the public sector is a Special Purpose Vehicle (SPV) with sub-contractors providing the actual performance on its behalf
- The project involves some development or a construction phase, followed by an operational phase during which the full service is provided
- The project is wholly or partly financed by limited recourse debt.

In July, a Local Government Supplement to Standardisation of PFI Contracts is produced by 4Ps as guidance to provide assistance to local authorities.



'The aim of introducing PFI was to achieve closer partnering between the public and private sectors at both central and local government levels'.

The current state of PFI in the UK and its place in the global market

chapter two

The current state of PFI in the UK

PFI has been widely developed in the UK. New facilities in schools, prisons and roads have delivered substantial benefits, but UK policy makers are continuing to learn lessons on how PFI can be delivered more effectively.

PFI capital expenditures are an addition to traditional government capital expenditure. According to the UK's 2005 Budget, gross public sector capital expenditure is projected to rise from £38.8 billion in 2004-05 to £47 billion in 2005-06. As a proportion of Gross Domestic Product (GDP) public capital expenditure will rise from 3.3% of GDP to 3.8% over this period. Table 2.1 shows the projected levels of capital expenditure under PFI, as released by HM Treasury. Departmental estimates of capital spending by the private sector (signed deals) for the financial years 2005-06 to 2007-08 are shown in Table 2.2.

Table 2.1: Public sector gross investment

	Outturn %	Estimate %	Projections %
£ Billion	2003/04	2004/5	2005/6
Total public sector gross investment	29	33	41.7
(as % of GDP)	3.20%	3.30%	3.80%
Estimated gross investment under PFI (signed deals)	14.8	2.8	3.2
(as a % of total public capital expenditure)	33.79%	7.82%	7.13%
Total publicly sponsored capital expenditure	43.8	35.8	44.9
(as % of GDP)	4.83%	3.58%	4.09%

Source: Budget 2003, Budget 2004, Budget 2005, Treasury PFI statistics

Table 2.2: Departmental estimate of private sector capital spending (signed deals)

	Projections (£ million)		
	2005-06	2006-07	2007-08
Education and Skills	-	-	-
Health	848	560	334
Transport	1 494	1 343	1 202
ODPM	71	53	14
Home Office	45	0	0
Lord Chancellor's Department	27	18	0
Defence	458	304	181
Foreign and Commonwealth Office	5	5	0
Trade and Industry	8	1	0
Environment, Food and Rural Affairs	47	28	27
Work and Pensions	-	-	-
Scotland	109	32	-
Wales	23	0	0
Northern Ireland Executive	40	24	0
Chancellor's departments	41	36	37
Cabinet Office	-	-	-
Culture, Media and Sport	13	9	0
Total	**3 229**	**2 413**	**1 795**

Source: Budget 2005, HM Treasury

Table 2.3: Signed PFI projects 1987-2004

Breakdown by year

Year	Number of signed projects	Capital value (£m)
1987	1	180.0
1988	0	0.0
1989	0	0.0
1990	2	336.0
1991	2	6.0
1992	5	518.5
1993	1	1.6
1994	2	10.5
1995	11	667.5
1996	38	1560.1
1997	60	2474.9
1998	86	2758.0
1999	99	2580.4
2000	108	3934.2
2001	85	2210.8
2002	70	7732.5
2003	52	14854.1
2004	45	2809.8
Total	**667**	**42634.9**

Source: HM Treasury

Table 2.4: PFI in government departments (cumulative total, 1990-2003)

	Number	£ m	% share
Transport	44	37 972	66.9
Defence	59	4 011	7.1
Health	152	3 596	6.3
Scottish Executive	29	2 217	3.9
Education	102	2 028	3.6
Home Office	52	1 976	3.5
Work and Pensions	7	961	1.7
Welsh Assembly	17	508	0.9
Northern Ireland Executive	29	395	0.7
Environment	14	1 000	1.8
Others	112	2 060	3.6
Total	**617**	**56 724**	**100.0**

Source: IFSL, 2003

Between 1986 and 2004, 667 projects were signed under PFI with a capital value of over £42 billion. While there were a few projects in the early 1990s, including a large contract of £4 billion for the Channel Tunnel Rail Link in 1996, most have been signed since 1997 (see table 2.3).

Overall, PFI has accounted for between 12-15% of annual public sector capital investment since 1996, with the remainder being carried out through conventional forms of procurement. The annual number of contracts has fallen from a peak of 108 in 2000 to 45 in 2004 but this has been accompanied by an increase in the average size of the contract, as procurement costs on smaller deals have come under greater scrutiny. PFI in government departments is shown in table 2.4 and the largest PFI contracts as a cumulative total between 1990-2003 are shown in table 2.5.

Table 2.5: Largest PFI contracts of signed deals in the UK (£ million)

	Capital value	Government department
London Underground (LU) PPP	28,381	Transport
Channel Tunnel rail link	4,178	Transport
National Air Traffic Services (NATS)	800	Transport
Skynett 5 military satellite communications	750	Defence
National police digital radio service	500	Home Office
M6 Toll Road	485	Transport
LU Ltd Northern Line trains	409	Transport
East Sussex & Brighton Waste Management	400	Environment
LU Ltd communications	355	Transport
Second Severn River crossing	331	Transport
Royal Navy Fleet Communications Service	280	Defence
University College London – New hospital	267	Health
Armed Forces Personnel Administration Agency	264	Defence
Section of A1(M) road	245	Transport
Glasgow Schools Project	225	Education
Nottingham light rail	220	Transport
Employment Service IT Partnership	217	Work & Pensions
Defence main building refurbishment	209	Defence
London Regional Transport Croydon Tramlink	205	Transport

Source: IFSL, 2003

The future prospects of PFI in the UK

In 'PFI: Meeting the Investment Challenge', published by the Treasury on 15 July 2003, the progress of PFI in the UK is reviewed and concludes that the future of PFI in the UK seems certain. On a capital value basis, the UK Treasury expects the biggest increases to come in the health and defence sectors. The Department of Health projects 55 deals by the end of 2005 with an estimated capital value of £6.5 billion while the Ministry of Defence is expected to sign 14 deals with a similar capital value.

PFI will no longer be used for IT projects or for projects costing less than £20 million because of the high transaction costs. There is also to be increased investment in secondary schools through programmes such as the 'Building Schools for the Future' programme. New areas for the PFI will include social housing, urban regeneration, and waste recycling.

PFI construction performance in the UK

Evidence from two studies in the UK about PFI performance is shown in table 2.6.

Table 2.6: PFI construction performance in the UK

PFI construction performance in the UK

Performance features	National Audit Office (2001)	HM Treasury (2003)
1. Delivering on time	76% (PFI) 30% (Non-PFI)	88%
2. Delivering to budget	79% (PFI) 27% (Non-PFI)	79%
3. Quality of design	The consortia in PFI projects: Invested in good design and construction at the start of the contract; achieved better quality buildings and reduction in maintenance costs while maintaining the assets to the standards agreed in the contract; placed more emphasis on aesthetics of design than before.	

Source: NAO, 2001 and HM Treasury, 2003

Table 2.7: PFI operational performance in the UK

Performance features	National Audit Office (2001)	HM Treasury (2003)
1. Achievement of expectations	N/A	25% 'far surpassing' 35% 'as expected' 16% 'surpassing'
2. Value for Money	6% 'excellent' 46% 'good' 29% 'satisfactory' 15% 'marginal' 4% 'poor'	N/A
3. Overall performance of the private sector matching up to expectation at the time of contract close	N/A	25% 'far surpassing' '51% 'as expected' or 'better' 18% 'less than expected' 6% 'much less than expected'

Source: NAO, 2001 and HM Treasury, 2003

PFI operational performance in the UK

Evidence from the same studies in the UK about the PFI operational performance is shown in table 2.7. Full assessment of the operational performance of PFI will only be possible at a much later stage in the contracts. A National Audit Office study of 98 projects and HM Treasury study of 61 projects has provided initial indications of overall project performance through seeking the view of public sector PFI managers on achievement of expectations and VFM.

PFI's place in Europe and in the global market

PFI in Europe

The United Nations has become an increasingly prominent advocate of PPP/PFI in Europe. The United Nations Economic Commission for Europe agreed to establish the Build, Operate, Transfer (BOT) Expert Group in January 1996, to provide information to its member states on new project finance techniques for countries in central and eastern Europe. Despite the enormous international interest at regional, national and international levels there has been disappointment at the lack of successful PPP/PFI. One of the key barriers has been the lack of government skills in identifying and bringing forward projects into the market.

Across Europe and elsewhere, governments and local authorities are investigating how the concept of PPP/PFI might work in their markets. One of the most efficient models seems to be to appoint one centralised government office to facilitate privately financed infrastructure projects. Many countries have established PPP/PFI units. It is a positive time for PPP/PFI, with project potential increasingly recognised. Each market in Europe is at a different stage in the development of PPP/PFI. The European market as a whole appears to be changing and evolving. Table 2.8 shows a selection of different European countries (except UK) and the current situation of PPP/PFI projects respectively.

Table 2.8: Current situation of PPP/PFI in different European countries

Country	Explanation of government PPP/PFI policy and projects
Croatia	No single government authority. Government strategy is positively oriented to use BOT schemes for motorway construction. Transport, energy and water sectors have priority. A new law is being prepared to facilitate concessions.
Czech Republic	In 2000 a task force was established to study PPP/PFI proposals. The task force will act as the nucleus of the joint venture of the public institutions and the private sector.
France	No formal governmental PPP/PFI unit. There is a long-established tradition of public-private co-operation using a concession structure. The French PPP model goes back more than a hundred years in the form of Societés d'Economic Mixtes and Concessions. PPP/PFI is not an instrument permitted in the social infrastructure area.
Germany	No formal central government unit or programme. A BOT law exists. Principally developing PPP/PFI in the transport (tunnels), defence and education sectors.
Greece	Government has formally launched a PPP/PFI programme in November 2000. There is a central PPP/PFI unit. Road concessions (real toll), 2004 Olympic Games infrastructure, light rail projects.
Hungary	No governmental authority specially assigned to deal with PPP/PFI. Seriously considering the PPP/PFI model for water, waste disposal and transport sector. The government has serious intentions to expand public-private partnerships (Széchenyi Plan).
Ireland	The government has a strong public commitment to a formal PPP/PFI programme. The Irish administrative structure is based on the interaction of four different elements: (1) Central PPP/PFI Unit in the Department of Finance, (2) the Interdepartmental Working Group on PPPs/PFI (IDG), (3) the Public/Private Informal Advisory Group on PPPs/PFI (IAG), (4) the Cabinet Sub-Committee on Infrastructure. Many projects covering road, rail, education, water and waste sectors.
Italy	There is a special PPP/PFI Taskforce – Unità tecnica Finanza di Progetto (UFP). Legislative reform of the Public Works Framework Law (Merloni Law) in 1998 set the framework for using private sector contractors and incorporated provisions on project finance. Hospital, transport and waste management projects are in progress. The government expected to finance through private funds €9 billion of new infrastructure between 2001-2004.
Netherlands	A strong framework is in place for PPP/PFI including a dedicated PPP/PFI Unit. Kennis-centrum PPPs was set up in 1999 within the Ministry of Finance. The current list of projects includes road, railway, harbours, water, health, education and government buildings projects.
Poland	PPP/PFI is a new concept in Poland. Some pilot projects have been identified. The Polish law provides for direct financing by government (up to 15%) of the total costs of the development of motorways. The same law allows government to share the risk of investment up to 50%.
Portugal	Portugal was an early exponent of PPP/PFI in Europe. Many large road PPP/PFI projects have been pushed ahead successfully in Portugal, for example the Tagus Bridge in Lisbon. There is no central PPP/PFI government unit. Ministry of Public Works has developed the SCUT programme to build the country's road infrastructure. The government is promoting large and medium sized PPP/PFI projects.
Spain	No established formal PPP/PFI Unit. Government has a road programme using the shadow toll structure. PPP/PFI projects are planned for roads, rail lines, health and waste management sector.

Source: United Nations, 2002; IFSL, 2003 and PwC, 2001

The situation of PPP/PFI in other countries outside Europe is summarised in table 2.9 below. It is also worth noting that there are three significant omissions, namely the United States of America, China and Russia. The US Government does not have a recent track record of Public Private Partnership (although the early railways were developed as part of an early form of PFI). There appears to be a desire to explore PFI in Russia but the current political climate is not conducive. China has been involved in some PFI but there is no formal source to obtain accurate data.

Table 2.9: Current situation of PPP/PFI in some countries outside Europe

Country	Current PPP/PFI situation
Australia	The first DBFO privatisations occurred in the 1990s. Victoria, New South Wales and Queensland have now developed PPP/PFI policies and plans for future investment. Partnerships Victoria (PV), established in 2000 is more of a policy and guidance approach as opposed to an agency. PV provides guidance and assistance for partnership projects, but does not manage processes related to specific projects or provide approvals There is a certain amount of debate surrounding the VFM afforded by PPP/PFI.
Brazil	The Brazilian federal government has formed a strategic PPP commission which has identified several pilot projects. The government required approximately $200 billion for infrastructure investment and PPP has been identified as a potential solution.
Canada	The Government of British Columbia established Partnerships British Columbia in 2002. Partnerships British Columbia provides advice, support and assistance to public sector client agencies on non-traditional funding relating to capital assets. Partnerships British Columbia maintains an independent profile within government and with the private sector. It is not an approval organisation but a facilitator of successful project implementation. Partnerships British Columbia expects seven financial closes by April 2005 representing approximately $3.5 billion worth of capital assets including hospitals, water treatment plant, bridges, roads and rail rapid transit line. Other provinces, such as Ontario and Quebec, are also looking at PPP.
Japan	A private finance law was enacted in 2000 (PFI Law) and the first PFI commenced later that year. PFI has progressed more slowly than expected. Seven deals have reached financial close. Various pathfinder projects are considered in offices, accommodation, waste, energy, transport and healthcare. In Japan there is no central government agency coordinating PFI policy or projects. Within government a PFI Cabinet Office for the Government of Japan has been established. Within the Cabinet Office the PFI Promotion Committee is beginning to develop guidelines and systems for the country.
Mexico	PPP is used as a solution to the $20 billion project schedule. Individual states are being encouraged to come up with pilot projects.
South Africa	Has looked closely at PPP for some time and set up a Governmental PPP Task Force in 1997 and a PPP Unit in 2000. South Africa manages public private partnerships through the National Treasury ministry. The Public Finance Management Act passed in 2000 governs the implementation of PPPs. In South Africa the PPP agency is mandatory and it is both a facilitator and an approval mechanism. The PPP Unit has published a list of potential PPP projects but few deals have been completed to date.

Source: Partnerships British Columbia, 2004; IFSL, 2003; PwC, 2001

Chapter three

Case study 1

Introduction

This chapter outlines eight PFI case studies in the UK and Portugal.

The A55 Road

Location: North Wales, United Kingdom

Project cost: £101 million

Sector: Transport – Major road development – Llandegai to Holyhead - refurbishment and upgrading of existing and new build of interconnecting sections.

Status: Operational. Finance agreement closed in 16 December 1998. Construction completed 31 March 2001. Contract Permit to Use 24 March 2001.

Sponsors: Concessionaire/Lead Manager – UK Highways Plc/Carillion-Laing JV.

Purchaser: Authority: National Assembly for Wales; Highways Directorate

Contract package: Bespoke 'PFI' style agreement

Concession: Total 30 year concession

Background – history and objectives

The project had been a regional imperative for a number of years. The original A5 had been a notorious bottleneck for at least 25 years. The main objective was to improve the travel times. On 10 July 1996 the Welsh Office Transport Minister, Guinlyn Jones, announced that the new A55 dual carriageway across Anglesey, was to be built. The existing A55 across North Wales is part of the Trans-European Road Network, which has been upgraded to dual carriageway from the M56 motorway to the Llanfair PG bypass on Anglesey. The A55 DBFO Project extends the existing dual carriageway to Holyhead.

In December 1998 UK Highways was awarded the concession to design, build, finance and operate the A55 from Llandegai to Holyhead. UK Highways is a company consisting of Hyder, Carillion and Laing, who awarded the design and construct contract to a fully integrated joint venture between Carillion and Laing.

Bidding process – chronology of key events

A fairly protracted bidding process occurred between July 1996 and 16 December 1998.

Construction phase

The road comprises dual 7.3m wide carriageways with 1m hard strips and a design speed of 120km/hr. The route generally runs off line and parallel to the existing A5 through a rural environment. The last 1.2km is through the urban area of Holyhead where the design speed is 85km/hr.

Table 3.1: Construction work summary

Ecological work; archaeological work.
Site clearance; earthworks (3.5million m3); drainage (100 000 million).
Road construction: length approximately 25 miles; 300 000 tonnes of Bitmac; 47 000 m3 concrete; 11 000 tonnes of reinforcement; 1.5million tonnes of road aggregate.
Structures: 23 bridges, 10 underpasses, 9 major culverts, 7 major retaining walls.
Traffic signs, road markings, signals and lighting.

Time and cost – completed two years ahead of plan. Cheaper than traditional procurement, however fees are payable for 25 years. All maintenance at risk to concessionaire.

Quality – better than traditional - because concessionaire must maintain for 25 years.

Operational phase

Introduced two years earlier than anticipated. Working to an agreed shadow toll payment mechanism.

Risk transfer

As a very early project the risk transfer was predominantly to the concessionaire who passed the same risks on to the road constructor or the road operator company.

Value for money

The taxpayer, client and concessionaire all achieved VFM as a road has been constructed two years ahead of schedule. The almost total transfer of risk on to the private sector prevents escalation of costs and time and provides government with a more defined cash flow cycle. The private sector concessionaire is in a position to transfer a significant proportion of associated construction risks to the contractor and the operational risks to the operational contractor which prevents any significant changes to their financial cost model.

Implications for the JV consortium: The contract did not permit increased payments by the authority to reflect increases in the contractor's costs, but only in certain circumstances, such as department changes. The consortium had the flexibility to change the design and incorporate innovative ideas and used value engineering wherever possible, in order to minimise costs and hence provide VFM. The consortium's financial gains were reliant on shadow tolls in conjunction with minimum maintenance costs, making it necessary for the road to be completed on time and to a high standard.

Implications for the construction contractor: One problem with regards to VFM for the contractors was the protracted nature of the bidding process and its expense (estimated to be five times more expensive than traditional bids of a comparable cost). This puts primacy on how many construction firms can afford to risk this sum of money on potential non-starters. It has been suggested that there should be limitations to competition to three or four parties to reduce the number of failures.

Table 3.2: Quality implications for the contractual parties

Client	Concessionaire	Contractor
The DBFO Co. is responsible for a 30-year concession period. The level of commitment of the DBFO Co. is far greater than what it is traditionally.		In PFI/DBFO it is necessary to get the quality right. The consequence of lane closures could result in a tremendous loss of revenue to the DBFO Co.
The quality has to be there from day one, or potentially future problems could occur.		DBFO projects provide quality from the short to medium term.
	Under traditional procurement the client can specify what they want, the same procedure can occur within PFI projects.	'No defects', does not necessarily equate to better quality.
	It is difficult to determine whether PFI produces better quality.	PFI produces a similar quality to traditional methods; it is very dependent on the quality of the people.
		The 30-year concession period may be too short to ensure the achievement of long term quality.
		Long term involvement does not ensure good quality within a project.

Key Positive Neutral Negative

Key messages

The main obstacles

Time constraints: Unable to look at alternative methods of achieving these solutions. Lack of time to plan the project properly. Concession periods may be too short and therefore constrain the achievement of better quality in projects.

Risk: Better planning and a better understanding of what needs to be done. The earlier the team is brought together the better the understanding will be of the quality required. Risk is transferred onto the contractor and the contractor will not invest long term quality into the scheme.

Documentation: A lack of understanding about the complexity of the documentation and the contract conditions.

People: Quality is often dependent on the quality of people. It costs no more for operatives to carry out a good job as opposed to a poor job.

Knowledge: Lack of background and history of the project. Not being able to understand problems that the client may experience when taking the project through public scrutiny.

Money: Constraints minimise the quality. The more money, the better the quality the project will be.

Table 3.3: Summary of perceived quality objectives

Client	Concessionaire	Contractor
		The A55 is far superior in terms of quality, reduced wastage, less remedial work required than normal. The site has been tidier throughout the project.
The DBFO Co. (UK Highways) is responsible for the project for 30 years. Quality is required from the start to ensure minimum maintenance.		The nature of the risk transfer has enabled the JV to provide a better quality project.
The nature of the contract ensures that quality is there from day one.	The A55 provides an overall better quality service.	Quality has to be right, otherwise lane closures (for remedial work) would result in loss of revenue.
	In terms of construction, UK Highways was unsure as to whether PFI achieves better quality in comparison to traditional routes.	The project was completed with zero defects, but these may be measured against a product of a lesser quality.

Key Positive Neutral Negative

Conclusions

The project became operational two years before the anticipated operational date utilising traditional procurement techniques. Transfer times have improved and the travel volumes have also increased beyond the maximum forecast. A few quotes taken directly from the case study participants illustrate the benefits of the PFI approach for this project:

- *'The level of commitment is far greater than traditionally…this ensures that the quality is there from day one otherwise it could cause future problems.'*
- *'The A55 is far superior in terms of quality, reduced wastage, less remedial work required than what there would be traditionally.'*
- *'The project has been completed with zero defects.'*
- *'The A55 overall provides a better service.'*

These statements highlight the widely accepted view that this PFI contract has provided VFM. However, it has been acknowledged that it is difficult to determine whether PFI provides better quality in comparison to traditional routes, as traditional routes generally have lower specifications and are simpler to construct. Due to the encouragement of lifecycle costing, it is likely that good quality materials will be used to provide quality long term – with life-cycle costing, better quality materials may be used to cut down on maintenance costs.

Further investigation: is required of the accuracy of the operation and maintenance forecasts and the whole-life cycle costs should be re-examined in view of the increased traffic flows to inform future predictions for road construction projects.

Ackowledgements

The original case study material was prepared by Charmaine O'Connor, Centre for Risk Management Research, School of Construction and Property Management, University of Salford.

Case study 2

Victoria Dock Primary School

Location: Kingston-Upon-Hull, East Yorkshire, United Kingdom

Project cost: Total cost £1 million

Sector: Education

Status: Operational since January 1999

Sponsors: The Victoria Dock School PFI Limited owned by Sewell Construction

Purchaser: Kingston Upon Hull City Council Education Authority

Contractual package and concession period: The City Council contributed £200 000 covered by central government grants. The private partner applied £250 000 of their own funds and recurred to a traditional corporate finance bank loan over 10 years for financial leverage for the remainder of the financing. The land where the school was built has been leased to the Sewell group for 40 years, although the PFI contract is for 25 years only. For the 15 years following this period, the buildings and land can have alternative uses ranging from a school, disco, nursery, homecare, etc, each according to the needs of the local residents. The reason for opening up the possibility of an alternative use for the buildings is that in 25 years the demographics in the area may have changed and there may therefore no longer be a need for the school. Alternative uses could therefore be more beneficial in the longer term. The complete concession is due to end in 2039.

Special features: This was the first primary school in the UK to be built under a PFI scheme. The project was negotiated in 1998 between Hull City Council and Sewell Group and its success meant that an extension of facilities soon had to be contemplated. The new building was completed in January 2001.

Background – history and objectives

The Victoria Dock Primary School is located in Kingston-upon-Hull and serves the new estate development of Victoria Dock. It is part of a revitalisation programme of neglected areas such as the docks. It was built due to public pressure because of a lack of educational facilities in the area. A PFI scheme was used because Hull City Council didn't have sufficient funds to build a new school.

Bidding process - chronology of key events

The life cycle of this PFI project started with the Kingston Upon Hull City Council Education Authority establishing a 'Service Need' for the provision of local educational services. As the Council had insufficient funding to undertake construction it considered the then innovative PFI route in the education sector. The standard procedures in a PFI required the development of a business case and the Public Sector Comparator. This was followed by the Intention To Negotiate (ITN) and the nomination of Sewell Construction as the preferred bidder. It then took 12-15 months for the signing of the PFI contract and to achieve financial close to provide 25 years of educational services. Within this contract there is a further extension of 15 years for possible alternative use of the land and building.

The major delay was caused by the need to sort out the legal details – this took six months while in normal circumstances the average period would last around two months. The lengthy negotiations were worsened by an incomplete design. Only after being selected as the preferred bidder was the design refined and detailed by Sewell. The school was scheduled to start operating in January 1999, which made it necessary to reduce the construction stage from nine to six months. This was achieved successfully. A further extension of the school premises was completed in September 2001.

Construction phase

The construction was undertaken by Sewell Construction. The Sewell Group had past experience in school construction and property development. The group had a great deal of involvement and expertise in building maintenance, refurbishment of schools and hospitals, etc. and this gave the group a sense of a long-term approach to business. As regards the construction and design sub-contract, no commercial details have been released.

'This was the first primary school in the UK to be built under a PFI scheme'.

Operational phase

The facilities management is provided by Sewell Facility Management. Payment is against square footage of class space availability and performance. In the case of a teacher's absence, due for example to illness or other external cause that affects availability or performance, they lose their revenue. This loss is covered by insurance and the premium is built into the financial model. After 40 years the buildings and the land are to revert to the council. A possible extension of the contract is on an open book basis, ie, the concessionaire states all the costs which are verified by an auditor from the Authority.

The school began with 60 pupils in 1999, rising to 94 by 2000 (26 in kinder-garden) with ages ranging from three to eleven and distributed in three classes: three to five, six to seven and eight to 11. The school has been operating successfully and has earned a good reputation with growing demand from outside the estate development. The construction of a further building was completed in January 2001 and raised the total capacity of the school to 220 pupils. Sewell Facility Management undertakes the day to day maintenance and repair maintenance. Sewell Construction built the kitchens but doesn't provide catering. The catering is contracted-out to the local authority, which already had this capacity and was keen to use it. Meals are prepared offsite and heated in the school.

Risk transfer

The essence of this PFI contract lies in the transfer of risk to the private sector. The underlying concept is that the risk is allocated to the party best able to manage it, and this results in cost reductions brought about through increases in efficiency and innovations introduced by the private sector. The Victoria Dock Primary School PFI Ltd takes all the risks inherent to the concession, such as the social, legal and regulatory, economic and financial, environmental, political, and technical (bidding, construction and design) risks.

In these risk categories the main issues were related to bidding costs as the legal costs were ten times the original estimate (ie £50 000 instead of £5 000). The construction and design risks were minimised by adopting conservative design and construction techniques with which Sewell had ample experience. The constructor even supplied all the materials, taking special care to use only those whose reliability was well proven. As the contract is for availability of space there is no risk derived from any demographic changes in the area.

The school has an insurance policy (hotel type) that covers the whole range of services. The school was designed to have low maintenance costs, paying special attention on the need to reduce potential vandalism. For instance, use is made of external steel shutters (very uncommon in the UK) which, although more expensive (due to higher initial investment and maintenance every six months) prove in the long run to be a good investment by reducing (or stopping) the breakage of glass windows.

As the school pays for its own gas and electricity, great effort was made to design an energy efficient building (also not currently common in the UK). Some special features to reduce whole life cycle costs include: double glazed windows, large cavity walls with air pockets to improve insulation, less expensive roof tiles that are replaced every 15 years instead of 25 years for the traditional aluminium foil decking. In addition the concrete floor was not insulated as it was judged that little heat would escape this way. Doors are painted instead of varnished and are therefore easier to repair. To reduce vandalism and for added security, thick plywood decking has been installed beneath the roofing tiles as a way of preventing break-ins.

So far the only vandalism has been graffiti. The security system is sub-contracted to Prosegur. To reduce costs and increase efficiency in maintenance the school has a multi-skilled and flexible 'caretaker' to resolve simple tasks, such as fixing a plug. Training is also provided. For more complex maintenance problems, such as the breakdown of heating systems, an external contractor is used.

Throughout the process a partnering approach was used, promoting co-operation between all the parties involved. The decision taken by Sewell to promote a 'community dividend' only enhanced this approach. The Victoria Dock School PFI Ltd returns a proportion of its profit to the community and, as of 2000, this represented around £35 000 being returned to the school to be applied on special projects. For example, a wildlife wood was set up within the school grounds to provide a wildlife habitat in an urban setting and an environmental focus for education.

Value for money

In the original UK PFI model, the government only approved the PFI financing scheme if it demonstrated that it produced VFM when compared with the traditional methods of procurement, ie it generated savings to the public sector during the whole-life cycle of the concession. This was done by comparing the contract costs with the Public Sector Comparator, which is calculated by costing what the public sector would have to pay to procure the construction as well as the operation and maintenance of the school over the period of the concession. To render the PFI project viable the city council contributed £200 000 (20%), otherwise it would not have been possible to produce a favourable comparison with the PSC.

Key messages

For the private sector

The Sewell Group went into the PFI market following a long–term strategy of return on investment and regarding PFI as an opportunity for investment of their disposable cash. It invested £250 000 of its own money (25%) recurring to traditional bank loans for financial leverage (55%). The group tends to opt for low risk PFI projects (such as schools) and expects a return on investment of an average 12-15% instead of 5% in bank deposits. The group also sees PFI as a strategy to smooth the cycles in the construction industry (usually ten year cycles). In times of depression for the construction industry the company then has a secure revenue stream.

The Sewell Group's involvement in PFI projects changed their attitude to business as they believe they are now more service rather than asset-oriented. Being held responsible for the school's operation and maintenance forced the group to carefully consider whole life cycle costing. The group is a strong advocate of small PFI projects for small companies, such as a school which can cost up to £5 million. The group's use of local labour even when constructing outside Hull promotes local employment, which is so important in depressed areas, whether in Hull or elsewhere. This local involvement also helps to ensure good maintenance in non-centralised locations. For instance, a large facilities management company can take longer to replace parts.

A partnership approach is always beneficial as a way of promoting cooperation between all the parties involved. The decision taken by Sewell to promote a 'community dividend' from the profits of the SPV is a good example of this approach. Joint ventures are a viable solution when any of the partners do not have the financial strength to undertake the project. In this case, Kingston Upon Hull City Council contributed with £200 000, otherwise it would not have been possible to obtain a favourable comparison with the PSC.

Previous experience is equally important. The Sewell Group had previous experience of constructing schools as well as a great deal of involvement and expertise in building maintenance and refurbishment in schools and hospitals. As a result, when Sewell decided to enter the PFI market they built upon their previous expertise and core business, adjusting their approach to a long term perspective of operation and management. The focus on reducing maintenance and repair costs was a critical issue during the project's development – Sewell was entirely responsible for building maintenance.

For the public sector

Small projects undertaken by municipalities are generally very sensitive to local social and economic environments. The primary lenders appointed a construction management consultancy to provide technical advice. This consulting company considered the Victoria Dock Primary School scheme as a 'bad PFI'. However, following a concerted campaign by the headteacher and the formation of a 'local' partnership between a local contractor and owner of construction and facilities management companies, the technical consultants considered a big contractor would have been in a better position to achieve economies of scale and therefore reduce overall cost. Effectively it was necessary to obtain the public partner's contribution to make possible a favourable comparison with the PSC.

This raises the political issue of the social dimension of local authorities' small projects which require a delicate balance to be struck between local relations and strict profitability that in principle favours large companies with large economies of scale. The benefit of utilising local labour for the project was not considered within this evaluation. In projects where reliance is put strictly on local contacts, there is a potential for inefficient contract awards. Careful auditing of the 'local social benefit' is necessary to avoid reductions in VFM. If five or more school projects can be 'bundled', the larger contracting companies are interested in bidding. One school PFI project alone is not sufficiently attractive.

A PFI contract in the education sector relieves education staff from administrative and managerial tasks. The role of the head teacher in premises management becomes one of a performance monitor. For example, if a lamp is not replaced within the pre-set period, a report is made and penalty points are given, potentially affecting the unit price of the service, and affecting the revenue of the concessionaire.

The legal complexities of the PFI regime caused the local authority in this case to incur increased legal costs. However, it is unclear whether this was a result of the size of the scheme or the novelty of the procurement method and lack of expertise.

It should, however, be remembered that without the PFI scheme a purpose-built local primary school would not have been built.

Conclusions

Based upon an evaluation of the stimulants and impediments to successful implementation of PFI projects this school represents an exceptionally successful project. Despite the technical consultant's declaration that this was a 'bad PFI', independent observation and critical analysis suggests otherwise. It could in fact act as an exemplar of SME involvement in PFI projects.

Further investigation: It would be beneficial to review the operations and maintenance financial model when compared to local authority maintained premises. A benchmark operation and maintenance model could be prepared to validate the benefits, or otherwise, of this PFI scheme. Such benchmark data would be useful for future PFI educational project appraisals.

The projected 'social dividend' should be evaluated over the entire concession life. This could have a significant impact on the project's comparison with the original PSC.

The 'local social benefit' during the construction phase should also be evaluated and included in a recalculation of the scheme comparison with the PSC.

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Case study 3

Vasco de Gama Bridge

Location: Lisbon, Portugal

Project cost: €850 million and €120 million refinancing in July 2000

Sector: Transport – Bridge Crossing – New Bridge. 17.2 km construction and refurbishment and upgrading of existing Abril 25th Bridge and new build of interconnecting sections.

Status: Operational. Finance agreement closed in 1994. Construction completed 31 March 2001. Contract Permit to Use 24 March 2001.

Sponsors: Concessionaire/Lead Manager – Lusoponte (consortia of UK, French and Portuguese contractors) and Gestiponte (toll operators under franchise from Lusoponti).

Purchaser: Authority: GATTEL a Portuguese government agency.

Contractual package and concession period: Bespoke 'PFI' style agreement, including EU and World Bank finance and reversionary licence for traffic over original 25 de Abril crossing. Original end on 24 March 2028 (or 2250m vehicle crossings). Renegotiated within a global settlement for government changes to extend until 24 March 2030, with the removal of the traffic cap.

Background – history and objectives

In 1991 the '25 de Abril' road bridge was the only connection between the north and south banks of the River Tagus within 40km of Lisbon's city centre. A second crossing was urgently needed to reduce serious traffic congestion and to allow the development of the south bank of the Tagus for new industrial projects.

Bidding process – chronology of key events

Business case approved in 1991
EOI (OJEC) 1993
Contract and financial close agreed in 1994
Operation of original crossing commences 25 April 1996
New bridge operational in 1998
Concession ends in 2030.

Construction phase

Of the original initial cost €645 million was for new construction work, the balance being associated with maintenance costs for both bridges and payments for expropriated land, re-housing and environmental relief projects. The design life of the bridge structure is 120 years and consequently some inter-tidal zone piling was taken down to 100m rather than 60m. The increased depth and additional salt-corrosion measures meant that the marine piles were typically twice the diameter of corresponding land piles.

Due to legal delays in contract signing the contractors supported additional temporary site installations and commenced preparatory operations without any contractual protection. All such costs were totally at risk until contract signing. This was determined to be a more effective risk management strategy than awaiting contract execution and absorbing the delay within the concession programme.

Operational phase

The 'new' bridge operation commenced reasonably effectively. However, the 'take-over' of the existing bridge proved much more difficult than anticipated. Eventually, a completely revised toll collection system was installed on the 'old' bridge. This proved to be the only way to manage the control and monitoring of cash payments from toll booth to reconciliation at bank. Approximately 5% of all traffic attempted to avoid toll payment. The enforcement system relied upon video recording of vehicle registrations and manual follow up. It took four years for legislation to come into force giving powers to the SPV to clamp down on toll evasions.

Risk transfer

A detailed SLEEPT risk analysis is presented below. However, a number of unusual exogenous risks need to be identified. There was a lack of consistent government will. This resulted in a number of regulatory and technical changes. For example, the government was unable to implement contractual changes to the toll charges – local residents blockaded the bridges and refused to move until the proposed toll increases were cancelled. The government was forced to issue coupons for discount toll charges (10% discount for 20 tickets and 20% discount for more than 20 crossings per month). Environmental groups put concerted pressure on Lusoponte and the concessionaire faced enquiries for alleged violations of Environmental Impact Study requirements. Environmental design changes meant a 4.5 km viaduct rather than an embankment, resulting in construction cost increases of €125 million. These and other enforced changes were negotiated within a global settlement, in 2001, to restore the original financial balance within the concession.

Table 3.4: SLEEPT analysis of major risks

Major risk category	Risk issue	Risk impact rating 3 high 1 low	Risk holder	Risk management strategy
Social	Expropriation difficulties (CPO's)	1	Lusoponti	Accepted. Incorporated in original financial balance
	Local disruption and disturbance	1	Lusoponti	Accepted. Incorporated in original financial balance
	Damage to reputation after blockade protest	2	Lusoponti	Unanticipated – public relations exercise
Legal	General legislation and tax changes	1	Lusoponti/Gestiponti	Accepted as general business risk
	Toll default	1	Lusoponti/Gestiponti	Due diligence and accepted
Economic	Interest rate changes	3	Lusoponti	Project contingency €40m
	Finance shielding	2	European Investment Bank (EIB)	Flexible financing structure over 20 year term
	Toll default	2	Gestiponti/Portuguese Government	Accepted for four years until legislation passed. Agreement to 40% of fines levy as compensation for additional burden
Environmental	Additional EIS requirements	2	Lusoponti	Accepted
	Design changes due to EIS revisions	3	Lusoponti/Portuguese Government	Accepted. Altered the financial balance and GSA (General Settlement Agreement)
	Remediation measures in Special Protection Area	2	Portuguese Government	GSA €6m
Political & Regulatory	Inconsistency of government will	3	Lusoponti	Project management and communication/information strategies
	Third bridge	1	Lusoponti	Major involvement in pre-feasibility development
	Buzinao (blockade protest)	3	Portuguese Government	GSA
Technological	Late approval of project details	3	Lusoponti/ sub-contractors	Project management and technical expertise brought in
	Design development	3	Lusoponti/Portuguese Government	Design developments cost €16m, of which €12.5 recovered from Gov't.
	Scheduled completion date	3	Sub contractors	Delays and damages clauses in construction contracts
	Traffic risks/ volumes	1	Gestiponti	Accepted – mitigated by operating both bridges
	Operation/maintenance risks	2	Gestiponti	Management systems knowledge management, whole life cycle costing, improved traffic management systems

Value for money

Public Sector Comparator: No PSC exists in Portugal. However, PFI was the only mechanism available to the Portuguese government to deliver this project. At this time considerable fiscal pressure was being applied by the EU to meet the Maastricht convergence criteria.

Value for money: The VFM evaluation of 'the only show in town' is impracticable. However, recent indications suggest that the Government is intent on incorporating a third crossing within this concession agreement, an indication of government acceptance of value for money.

Table 3.5: Project funding

Finance Source	Value	Notes
European Union Cohesion Fund	€320m (35%)	Non-reimbursable
European Investment Bank	€115m (13%) €185m (21%)	In Deutsche Marks In Portuguese Escudos
		Term of 20 years with no capital repayment for first 10 years, fixed interest rate for first 15 years.
Existing revenues	€50m (6%)	From 25 de Abril Bridge
Government grants etc	€164m (18%)	
Shareholders	€66m (7%)	Share capital €25m Supplementary equity € 35m Deferred 'Suprimentos' €6m

Key messages

For the private sector

The social, legal, environmental, political and regulatory risks associated with a long term concession caused enormous problems in this case. The advantages often associated with innovative activity appear to have been counteracted by unanticipated risks that occurred, hence the legal actions and the 2002 General Settlement Agreement.

Government legislation also became necessary to enforce toll violation charges, when issued by a private company rather than a government department. This primary legislation took four years to enact.

The creation of innovative solutions to prove the viability of the finance mechanism – the transfer of the income from the original bridge toll income to the concession - ameliorated the risks associated with determining the effect of route transfer of vehicles between the two crossings.

The risk transfer mechanism did not specify which risks are taken entirely or shared by the public sector and instead forwards the renegotiations to relatively undefined events that might affect the financial balance of the concession. This mechanism must be avoided in future to avoid complicated litigation.

The shareholding composition for this project changed during construction and, soon after completion, it changed again.

The inter-related and changing shareholdings of Macquarie, one of the world's largest toll road operators, Kvaerner/Trafalgar House, Odebrecht and the Vinci Group meant that the strategic management of the project was in a state of flux. However, the ability to divest early and still obtain reasonable returns on investment is a significant advantage for the contractors.

Table 3.6: Equity participators

Shareholder Co.	% Holding 1999	% Holding 2000
Kvaerner Con. Intl. Norway, (formerly Trafalgar House Con. Special Projects) UK	24.80	1.00
Campenon Bernard SGE, (Part of Vinci Group of Co.s) France	22.00	22.00
BPC- Bento Pedroso Construcoes SA. Portugal, (Part of Odebrecht Organisation, Brazil)	14.84	14.84
Mota & Companhia SA, Portugal.	13.83	13.83
Somague, Sociedade de Construcoes, SA, Portugal	13.83	13.83
Teixeira Duarte – Engenharia & Construcoes SA, Portugal	7.50	7.50
Sociedade de Constructoes H Hagen. SA Portugal (Part of Vinci Group, France)	2.80	2.80
Edifer Construcoes Pires Coelho & Fernandes SA, Portugal	0.40	0.40
Macquarie Infrastrucure Ltd, UK (Part of Macquarie Bank, Australia)	0.00	23.80

For the public sector:
Portugal has a different economic, social, environmental and regulatory framework from the UK, France or Brazil. The most important issue that occurred was the extensive litigation between Lusoponte and GATTEL. The 'freezing' of the proposal and its consequent financial balance is vital to avoid the difficulties associated with negotiation of global settlements for enforced changes beyond the control of the concessionaire.

The existence of clear and concise 'compulsory purchase order' legislation is vital to the financial viability of major projects. The delays in achieving CPOs had an effect on the financial balance for the project. There was an element of 'land price escalation' that occurred and a number of attempts to 'ransom' the project by delays in execution of CPOs.

The local and regional government also underestimated the potential impact that the general public could have on a major project, as illustrated by the blockade protest. Political control was compromised by having to concede to local demands.

Conclusions

Despite due diligence, a number of unforeseen problems occurred, one related to alterations to an existing contract that was transferred to the concessionaire for use of the 'old' bridge. Another related to a legislation gap that left the concessionaire exposed to significant under-recovery against the original financial balance model.

Despite financing a larger sum until the General Settlement Agreement, the project has successfully operated for six years. It is too early to examine the operations and maintenance forecasts within the financial balance. However, traffic flow has grown beyond the most optimistic forecasts and the concession condition requiring the preliminary development of the feasibility and viability model for a further bridge crossing has already been instigated. However, no conclusions have yet been reached.

Further investigation: The operations and maintenance forecasts and the whole life-cycle costs for the crossing should be re-examined in view of the increased traffic flows to inform future predictions for road construction projects.

Acknowledgements

The original case study material was prepared by Dr Teresa de Lemos of IST, Lisbon, Portugal. The original data collation was supported by a grant from Fundacao para a Ciencia e Tecnologia, Portugal.

Case study 4

Her Majesty's Prison (HMP) Altcourse

Location: Liverpool, United Kingdom

Project cost: £247 million

Sector: Security/detention

Status: Operational. First prisoners arrived in December 1997

Sponsors & concessionaire/lead manager: Group4/Tarmac

Purchaser: Her Majesty's Prison Service (HMPS) on behalf of the UK Government

Contractual package & concession period: A 25 year contract concession was concluded. The project sponsors executed capitalisation of the project privately.

Special features: One of the first two PFI prison projects within the UK. Construction ran concurrently for both projects, although using different concessionaires and lead managers. The concessionaire is responsible for all custodial and ancillary services such as catering, education and medical facilities. A partnering approach was adopted between HMPS and concessionaires. (There is no published explication of this requirement. However, government-sponsored construction industry reports, eg Latham (1995) and Egan (1998) were receiving significant government recognition and major political initiatives were being developed which openly advocated the adoption of partnering within construction activity).

Background – history and objectives

In September 1993, in response to the overcrowding in the UK's existing 132 prisons, the Home Secretary announced that the first two, of six, new prisons would be procured using PFI. Sixty consortia attended a pre-tender conference. The contracts were for a 600 place prison at Fazakerley, now known as HMP Altcourse, and an 800 place prison at Bridgend, now called HMP Parc. (See case study 5).

Bidding process – chronology of key events

As indicated in table 3.7, the tendering process from notification of intention to the formal award of contract lasted 27 months. The establishment of the initial short-list took seven months. From short-list to initial tender required a further eight months. However, all of the short-listed bidders made qualifications that made all of the received bids non-compliant. The most significant qualifications from the bidders related to issues of the unacceptability of risk transfer from client to concessionaire, especially in relation to occupancy and under-utilisation of available places.

This necessitated an amendment to bid conditions and resulted in the subsequent alteration of the procurement route from restricted to negotiated tenders. The period required to complete these contractual amendments was four months followed by a re-tendering period of two months. Further negotiations took place over a three month period before HMPS announced preferred bidders for both projects. A further period of approximately eight months passed before the formal contract was executed.

Table 3.7: Chronology of key events

Sept. 1993	Home Secretary announces plans to procure two new prisons under the PFI
Nov. 1993	HMPS publishes Official Journal of the European Commuinity notice. 60 consortia attend conference. 10 consortia seek further information
Mar. 1994	HMPS short-list six consortia for tender list
June 1994	Lazard appointed as financial advisors to HMPS
July 1994	One consortium disqualified after acquisition/merger activity
Nov. 1994	HMPS receives initial tenders. Coopers & Lybrand appointed as project managers for both schemes. All tenders prove to be non-compliant. Procurement route amended from 'restricted' to 'negotiated' tender
Feb.1995	Formal issue of revised tenders to five remaining consortia
Mar. 1995	HMPS holds further discussions with three bidders
May 1995	HMPS announces preferred bidders for both projects
Dec. 1995	Contract for Altcourse prison signed with Group 4/Tarmac
Dec. 1997	Altcourse prison receives first prisoners

In March 1994, HMPS informed the six preferred bidders that both prisons would not be awarded to a single bidder. The first round of tenders in November 1995 proved to be non-compliant, owing to concerns by the bidding contractors over the principle of occupancy risk. In order to obtain compliant tenders, and on the advice of Lazard and the Treasury Solicitor, occupancy risk was shifted back to the public sector. The two projects were not readvertised because it was thought the first round of tendering had identified all likely bidders and the Prison Service did not wish to delay matters further. After issuing revised tenders to the five remaining bidders in February 1995, the information relating to the restriction of both contracts not being awarded to the same bidder was omitted.

This re-tender produced the following results.

Table 3.8: HMP Altcourse bids and the PSC comparison

Comsortia	Bids	PSC difference	Notes
Securicor/ Costain	221	-65	Declined due to successful bid on Bridgend project
Group4/Tarmac	252	-33	Accepted Bid subject to subsequent further negotiations
Premier Prison Services	272	+48	
Public Sector Comparator	248	-	

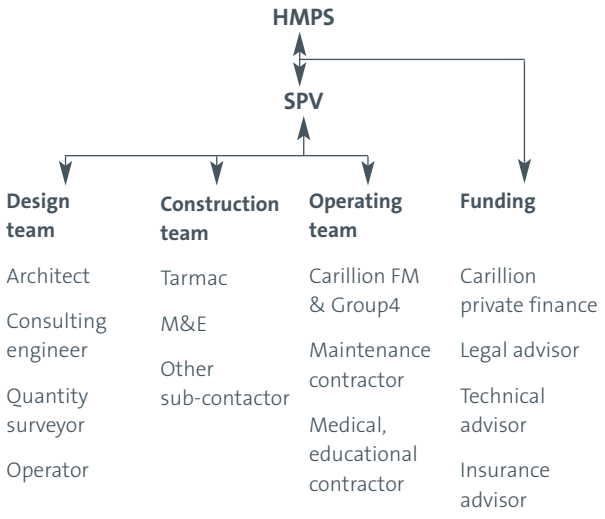
Despite the fact that the Securicor/Costain consortium was the lowest bid the Prison Service opted to award Fazakerley to the Group4/Tarmac consortium. Group4/Tarmac's bid for HMP Altcourse was scrutinised and revisions to the bid resulted in the accepted tender being reduced by £5million. This brought the contract sum down to £247million – £1million below the PSC. Further alterations issued by HMPS resulted in a variation order for an extra 118-place house block. The costs associated with this variation have not been recorded in any of the statistics contained within this paper.

However, when examined, and based on the accepted tender figure of £247million for HMP Altcourse the saving is only £1 million. Awarding the two contracts to separate bidders represented foregone savings of £31 million. This also ignored the statement by Securicor/Costain to both the NAO and HMPS that, for the award of both contracts, a further discount would have been negotiable. A figure they subsequently calculated to have been up to 5% of total bid was a saving of a further £24million. Independent construction advisors WS Atkins have subsequently concluded that a more realistic reduction for the award of both contracts could be considered to be 3%, which still equates to a further £16 million. The NAO placed major reservations over the conduct of the award process. After major concerns had been raised, the Director General of the Prison Service responded in person to severe Parliamentary questions.

Construction phase

The construction contract terms relating to price variations were complex and, in some important areas, might have been capable of more than one interpretation, particularly as to whether changes in costs such as utilities, bank interest, VAT and other taxation changes could trigger a price increase. However, it appears that the original estimates were sufficient to avoid litigation. The additional house-block was added after commencement and was therefore a negotiated price.

Table 3.1: HMP Altcourse project management structure



A successful project management strategy was implemented, with significant emphasis placed upon activity durations. HMP Altcourse became operational in December 1997. This represented a time saving in the region of 45% on comparable prisons built under traditional procurement.

Operational phase

Parts of the concessionaire's charges are increased automatically each year by an indexation formula and the concessionaire can claim for other price increases arising from factors beyond their control relating to operation and maintenance.

HMPS has an unusual 'step-in' provision in which they are liable to repay part or all of the sponsors' project borrowings if the contract is terminated after the prison is complete and/or if the operator defaults and no alternative operator is willing to run the completed prison under the original operational performance specification. Lazard estimated that the maximum payable by HMPS under this arrangement would be £84 million but the actual amount payable would be less if any of the contractor's borrowings had been repaid or if the outstanding value of the contract was less than the borrowings. HMPS would be allowed to deduct from the amount of money payable any additional expenses they expect to incur in obtaining the required level of service for the remainder of the original contract period. After testing this 'step-in' provision in competition, HMPS came to the view that it was obliged to accept this arrangement in order to make the projects acceptable to bidders.

Table 3.9 shows that, on average, staff unit costs were 21% lower and staff costs per prisoner were 33% lower. In table 3.10, analysing the relative contributions to the staff cost difference shows that lower unit costs account for 52% and the lower staff numbers for 48% of the difference.

Table 3.9: Comparison of staff costs per prisoner and unit cost of staff (Public to PFI)

	Average difference
Staff unit cost	-21%
Staff cost per prisoner	-33%
Proportion of staff cost difference due to:	
Lower staff unit cost	52%
Fewer staff	48%

Source: NAO

Table 3.10: Employee costs comparison (Public Service to PFI)

	Average difference
Employee unit cost	-22%
Salary	-14%
Pension costs*	-86%
Overtime	-65%

* The Civil Service pension scheme is non-contributory and offers generous benefits at obvious cost.

Source: NAO

Risk transfer

The risk allocation and risk acceptance by the prospective bidders was a major problem on this project. HMPS tried unsuccessfully to allocate virtually all risks to the bidders. This resulted in a first round of tender submissions that were all non-compliant. The submitted bids contained significant qualifications that caused the HMPS advisors to reject all first round bids. Following extensive negotiation with central government, HMPS re-allocated risks and, in particular, accepted full liability for all occupancy-related risks. In order to obtain compliant tenders, and on the advice of Lazard and the Treasury Solicitor, occupancy risk was shifted back to the public sector.

As previously stated, an unusual 'step-in' provision was created to make the operational terms acceptable to prospective bidders. This was not unreasonable for the first of this new 'breed' of prison. However, it was expected that this provision would be eliminated after operational experience had been achieved.

Value for money

The PSC was only marginally improved upon by £1 million. It should also be noted that the 'original' submitted bid was £252 million, exceeding the PSC by £4 million.

Table 3.11: Selected bid against PSC

	HMP Altcourse £ million
Selected Bid	252
Awarded Contract Value	247
Public Sector Comparator	**248**

The political 'market-making' decision has been described previously. Table 3.12 provides additional details of the bid information available at the time the contract awards were made.

Table 3.12: The leading bids against PSC

Consortia	Proposed contract prices (£ million)				Combined PSC difference (£ million)	
	Bridgend	PSC difference	Fazakerley	PSC difference	Combined bid total	Combined PSC difference
Securicor/Costain	**254**	-65	221	-27	475	-92
Group4/Tarmac	286	-33	**252**	+4	538	-29
Premier Prison Services	367	+48	272	+24	639	+72
Public sector comparator (PSC)	319	-	248	-	567	-

Both the NAO and the House of Commons Public Expenditure Committee questioned the Director of HMPS. The response from HMPS was that, as these were the first PFI prison projects, two factors led to the conclusion not to award both contracts to the same consortium, namely:

- There was no proven track record in successful PFI prison project delivery
- It was necessary to create a 'competitive market' in PFI prison building.

Awarding both contracts to the same consortium would have increased identifiable project delivery risks to an unacceptable level for HMPS and would have diminished project experience for subsequent PFI prison projects. HMPS rejected the contention that acceptance of separate bids at an additional £55 million was an expensive method of creating a 'competitive market' and managing an identifiable project risk.

In the available public records there is no evidence of questioning about the disparity of awarded contract and individual PSCs. The question of why one consortium can bid at approximately 17% below PSC and the other project is bid at only 0.4% below PSC remains unanswered. A further question arises as to whether the Altcourse project (at 0.4% below PSC) could be considered to demonstrably offer better value for money by adopting a PFI approach. Once again the question remains unanswered in public records.

Following these two contracts a third PFI prison contract of £131 million was let at Lowdham Grange in Nottingham. Kvaerner Construction acted as the main contractor. (A detailed study of this project is not included in this text; however certain significant statistics have been presented for illustrative purposes).

Table 3.13: Comparison of annual prisoner costs of first three private prisons

	Bridgend	Altcourse	Lowdham Grange*1
Net value of total contract price	£266m	£247m	£131m
Number of places	800	600	500
Net average annual cost*2	£13 300	£16 467	£10 480

*1 Lowdham Grange is not directly comparable since it is incapable of housing Category A, remand or un-sentenced prisoners. Category A prisoners require the highest conditions of security. Remand and un-sentenced prisoners require high levels of supervision because of the high risk of damage to property or self harm.

*2 The average public sector cost per prisoner is £24 750

Source: HMPS

The figures show that in terms of net value, Lowdham Grange is 21% lower cost than Bridgend and 36% lower than Altcourse. These statistics are included because they have been used to demonstrate that a 'market' in PFI prisons appears to have been created and that competition in this 'market' may have driven down contract costs. However, caution must be used since the specification at Lowdham Grange is not directly comparable with the other two contracts.

When compared with the published HMPS costs, Altcourse creates savings of over £8 283 per prisoner per year. Assuming maximum occupancy of 600 prisoners this is an annual saving of £4.97 million, and is equivalent to £124 million savings over the 25 year concession period.

Key messages

For the private sector

- The corporate objective of achieving competitive advantage via differentiation and a niche market strategy may be hampered by the government's wish to create a 'competitive market'
- Political risk factors assume major significance in contract success
- The gestation period for projects of this nature is long
- Abortive tendering costs (in the event of an unsuccessful bid) can be considerable
- Restrictions on the number of concurrent projects awarded to a single company may occur
- The contractors incorporation of 'innovative design' bids based upon changes to accepted practice may be criticised by the awarding panel and/or subject to alteration.

For the public sector

- There is a need for the project award panel to have an open-minded view of the project solution. PFI is based upon whole life-cycle performance and not exclusively on traditional design solutions
- Effective risk allocation at an early stage in the project brief can reduce the project gestation period and eliminate the need for multiple-stage tendering and pre-award negotiations over risk acceptance
- There is a need for a stable project brief. Client-initiated changes are not easily assimilated under this procurement regime
- There is a need for the client team to assess value for money on a like-for-like basis. Questions over great differences between accepted bid and the PSC should be resolved at an early stage

Conclusions

HMP Altcourse was an innovative approach to security /detention provision within the UK. As has been indicated, the earliest projects in any particular market sector are subject to significant 'political' machinations. Many of these have been identified within the case study details.

HMPS rejected numerous proposals relating to construction, layout and operations, significantly hampering the ability of the private sector to improve value for money. However, it should be remembered that this project became operational in a significantly reduced timescale. The NAO reported a time saving of 45% on traditional procurement.

The project also reveals significant cost savings on the operational aspects of the project and a like-for-like saving of £124million over the 25 year concession is a considerable saving. However, the case study indicates that a majority of these savings relate to staffing costs associated with the terms and conditions of employment of prison officers as private employees rather than public employees.

Subsequent to operational commencement, the SPV sought to refinance the project from the finance market. The consortium obtained significantly improved financial packages at this time, further improving the financial viability of the project.

Further investigation: is suggested to validate the operational costing for the detention provisions. An examination of the potential for further cost reductions by eliminating the restrictions on construction materials and project layout is also recommended.

The issue of full disclosure of all relevant information is raised by this case study. Further research and published guidance is needed as to the extent of disclosure that is required to allow the accurate determination of the financial model. Non-disclosure or partial disclosure raises issues relating to the genuineness of agreement between the sponsor and SPV. This issue has not been tested in UK courts.

Acknowledgements

The original case study material was prepared by Anthony Jones, School of Construction and Property Management, University of Salford.

Case study 5

Her Majesty's Prison (HMP) Parc

Location: Bridgend, United Kingdom

Project cost: £266 million

Sector: Security/detention

Status: Operational. First prisoners accepted in November 1997

Sponsors: Securicor/Costain

Purchaser: HMPS on behalf of the UK Government

Contractual package and concession period: A twenty-five year contract concession was concluded. The project sponsors executed capitalisation of the project privately.

Special features: One of the first two PFI prison projects within the UK. Construction ran concurrently for both projects, although using different concessionaires and lead managers. The concessionaire is responsible for all custodial and ancillary services such as catering, education and medical facilities. A partnering approach was adopted between HMPS and concessionaires. [There is no published explication of this requirement. However, government sponsored construction industry reports, eg Latham (1995) and Egan (1998) were receiving significant government recognition and major political initiatives were being developed which openly advocated the adoption of partnering within construction activity.]

Note: This case study was conducted concurrently with HMP Altcourse at Fazakerley, Liverpool. Since much of the detail has already been presented in case study 4, this shortened case study only provides information that is unique to HMP Parc. The analysis of key messages, conclusions and acknowledgements has not been repeated here, but should be referred to for a complete project synopsis.

Background – history and objectives

In September 1993, in response to the overcrowding of the UK's existing 132 prisons, the Home Secretary announced that the first two, of six, new prisons would be procured using PFI. Sixty consortia attended a pre-tender conference. The contracts were for an 800 place prison at Bridgend, now called HMP Parc and a 600 place prison at Fazakerley, now known as HMP Altcourse. (See case study 4).

Bidding process – chronology of key events

Table 3.14 presents a chronology of the key events.

Table 3.14: Chronology of key events

Date	Activity
Sept. 1993	Home Secretary announces plans to procure two new prisons under the PFI
Nov. 1993	HMPS publishes OJEC notice. 60 consortia attend conference. 10 consortia seek further information
Mar. 1994	HMPS short-list six consortia for tender list
June 1994	Lazard appointed as financial advisors to HMPS
July 1994	One consortium disqualified after acquisition/merger activity
Nov. 1994	HMPS receives initial tenders. Coopers & Lybrand appointed as project managers for both schemes. All tenders prove to be non-compliant. Procurement route amended from restricted to negotiated tender
Feb.1995	Formal issue of revised tenders to five remaining consortia
Mar. 1995	HMPS holds further discussions with three bidders
May 1995	HMPS announces preferred bidders for both projects
Jan. 1996	Contract for Bridgend prison signed with Securicor/Costain
Nov. 1997	HMP Parc receives first prisoners

In March 1994, HMPS informed the six remaining bidders that both projects would not be awarded to a single bidder. Both Parc and Altcourse were tendered concurrently.

The first round of tenders in November 1995 proved to be non-compliant, due to concerns by the bidding contractors over the principle of occupancy risk. In order to obtain compliant tenders, and on the advice of Lazard and the Treasury Solicitor, occupancy risk was shifted back to the public sector. The two projects were not re-advertised because it was thought the first round of tendering had identified all likely bidders and HMPS did not wish to delay matters further. However, after issuing revised tenders to the five remaining bidders in February 1995, the information relating to the exclusion of an award being made to the same bidder for both projects was omitted.

Table 3.15: Submitted bids and PSC comparison for both prisons

Consortia	Proposed contract prices (£million)				Combined PSC difference (£million)	
	HMP Parc	PSC difference	HMP Altcourse	PSC difference	Combined bid total	Combined PSC difference
Securicor/ Costain	**254**	-65	221	-27	475	-92
Group4/ Tarmac	286	-33	**252**	+4	538	-29
Premier Prison Services	367	+48	272	+24	639	+72
Public sector comparator (PSC)	319	-	248	-	567	-

Securicor/Costain subsequently submitted the lowest bids for both projects. Details are provided in table 3.15.

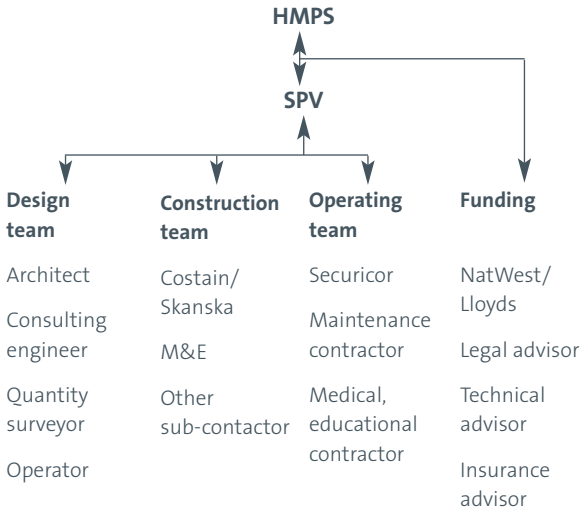
Despite the fact that the Securicor/Costain consortium submitted the lowest bid for each project and therefore was the lowest composite bid, the prison service opted to award only Parc to Securicor/Costain for a sum of £266 million and awarded Altcourse to another consortia. The Prison Service insisted on subsequent modifications to the Bridgend design accounting for the additional £12 million.

These decisions represented an overall saving, on both prisons, of £54 million, compared to public finance of the building work and contracting out of operations (when compared using the published PSC).

However, when examined, and based on accepted tender figures of £266 million for HMP Parc, the saving is £53 million on Parc. Awarding the two contracts to separate bidders represented foregone savings of a further £31 million. This also ignored the statement by Securicor/Costain to both the NAO and HMPS, that for the award of both contracts, a further discount would have been negotiable. A figure they subsequently calculated to have been up to 5% of total bid was a saving of a further £24 million. Independent construction advisors, WS Atkins, have concluded that a more realistic reduction for the award of both contracts could be considered to be 3% However, this still equates to an additional £16 million.

Construction phase

The Securicor/Costain design was scrutinised and HMPS variations resulted in an increase in the contract sum to £266 million.



Operational phase

HMP Parc became operational in November 1997. This represented a time saving in the region of 45% on comparable prisons built under traditional procurement.

Risk transfer

The discrepancy in the differences between awarded contract sums and the appropriate PSC is quite remarkable. These discrepancies and the potential foregone savings of a further £55 million (because of the reluctance to award both contracts to the same consortium) caused a significant political concern. Both the NAO and The House of Commons Public Expenditure Committee questioned the Director of HMPS. The response from HMPS was that as these were the first PFI prison projects, two factors led to the conclusion not to award both contracts to the same consortium, namely:

- There was no proven track record in successful PFI prison project delivery
- It was necessary to create a 'competitive market' in PFI prison building.

Awarding both contracts to the same consortium would have increased identifiable project delivery risks to an unacceptable level for HMPS and would have diminished project experience for subsequent PFI prison projects. HMPS rejected the contention that acceptance of separate bids at an additional £55 million was an expensive method of creating a 'competitive market' and managing an identifiable project risk.

Table 3.14: PFI bids and Public Sector Comparators

	HMP Parc
Selected bid	254
Awarded contract value	266
Public sector comparator	319

Value for money

When compared with the published HMPS costs, HMP Parc creates savings of over £11 450 per prisoner per year. Assuming maximum occupancy of 800 prisoners this is an annual saving of £9.16 million and is equivalent to £229 million savings over the 25 year concession period.

Acknowledgements

The original case study material was prepared by Anthony Jones, School of Construction and Property Management, University of Salford.

Case study 6

Joint Services Command and Staff College (JSCSC)

Location: Watchfield, Wiltshire, United Kingdom.

Project cost: Full financial details have not been disclosed. The construction contract was £88 million

Sector: Education – training staff officers of all three armed services

Status: : Operational. Finance agreement closed in 1998. Construction ended 6 September 2000.

Sponsors: Concessionaire/lead manager – Defence Management (Watchfield) Ltd.

The shareholders are:

- Serco (50%), facilities management company and the operation and maintenance service provider for JSCSC. Serco runs scientific establishments, maintains buildings, runs leisure centres, railways, etc
- Laing Investments(25%)
- Laing Hyder plc (25%), a specialist company set up to invest and manage PFI projects.

Purchaser: Secretary of State for Defence (Ministry of Defence – MoD)

Contractual package and concession period: The PFI contract, dated 5 June 1998, awarded to Defence Management the design, construction, financing and the operation and maintenance of the JSCSC for 30 years. The concession contract had 52 clauses that constituted the main contract relevant to either construction or service provision. There were also 28 schedules. In total 30-35 different firm agreements were involved. The concession ends in 2028.

Special features: The first PFI scheme in the defence sector combining education and estates, including housing, training support services, mess accommodation support services.

Background – history and objectives

The PFI contract, dated 5 June 1998, awards to Defence Management the design, construction, financing and the operation and maintenance of the JSCSC for 30 years. This college merges the educational activities of three services: Army, Royal Navy and Royal Air Force. It provides command and staff training at junior, advanced and higher levels for all three services. The concession covers the academic teaching, management of classrooms, lecture theatres and offices, facilities for single occupancy accommodation and 290 homes. The creation of the JSCSC followed studies undertaken by the MoD and was designed to:

- Maximise the opportunities for the common understanding of the approach to warfare and defence as a whole, consistent with the increasing importance of the joint, combined, multinational and inter-agency nature of future operations
- Provide the potential for future development of the college on a combined and interagency basis.

The establishment of the JSCSC involved the closure of the former staff colleges in the UK – the Joint Services Defence College and the Royal Naval Staff College at Greenwich, the Army Command and Staff College at Camberley and the Royal Air Force Staff College at Bracknell. The three Service Junior Divisions – Royal Navy Junior Division, Army Junior Division and Royal Air Force Junior Division – also moved to Shrivenham in August 2000, enabling all military command and staff training to be delivered from one site. The MoD operates the policy that for every required output or service, the PFI route has to be explored and the decision to pursue as a PFI project depends often on the MoD capital expenditure requirement. MoD policy is that there is no declared minimum capital or contract value threshold level below which PFI need not be considered. The initial location for this project was to be Camberley but the concessionaire proposed Watchfield due to excessive costs.

The criteria for site selection were:

- To be within two hours travelling from Whitehall
- Site cost
- Site extension provisions
- Security
- The existence of local resources both during the construction and the operational stages when it employs about 250 civilian staff.

The fact that there was a hospital nearby was also considered advantageous.

Construction and equipment of the buildings ended on 6 September 2000 and the JSCSC officially opened on 28 February 2001. The college has around 2200 students from the three services considered to be the top 10% of the armed forces. Foreign national servicemen also attend the JSCSC.

Bidding process – chronology of key events

In June 1997, the MoD issued Invitations To Negotiate (ITN) to a select list of bidders. On 5 June 1998, a PFI contract was signed between MoD and Defence Management (an SPV for Laing & Serco). The MoD set up one of the best client project management teams that Defence Management had encountered with sufficient empowerment and executive decision powers. In contrast the team from the construction sub-contractor was led by a young and inexperienced manager.

Construction phase

The construction sub-contract was a GMP contract between Defence Management and Laing Construction worth £88.85 million, and a fixed term of 113 weeks. The construction phasing had eight defined stages with 102 defined work packages.

The contract contained 28 Schedules. Schedule 5 (Construction Matters) was the most important document for construction. Schedule 13 (Review Procedure) caused difficulties for construction. Schedules 6, 7, 8 and 24 (Transfer Requirements; Equipment and MoD Property; Service Requirement Specifications and Method Statements; Services Mobilisation Requirements respectively) were the most important documents for Serco, along with 15 and 16 (Performance Monitoring System and Availability Deduction Mechanism respectively), which were reviewed by Serco.

The MoD wanted to make the JSCSC a flagship project, so the projected image was a key issue. The design was required to

- Have a significant visual impact
- Emphasise the status
- Be aesthetic whilst also functional.

The chosen design was modular, ie, repetitive to reduce costs. The materials used were proven to reduce risks.

Operational phase

Commercial arrangements have not been released.

The operation/maintenance (O/M) sub-contract was signed between Defence Management (Watchfield) Ltd and Serco and was aimed at procuring the facilities management equipment, recruiting the staff and putting in place a facilities and task management for the support services for the college. In total the SPV's initial investment was £5.8 million. It is a fixed price contract over 30 years and represents a general gross income of between £5-10 million per year paid monthly. Each service is paid monthly against performance criteria with typical monthly incomes from a service being between £10 000 and £200 000 a month, with deductions being made where performance has failed to meet the correct levels. Each service will have a range of six deficiency bands with deductions ranging from 0% to 20% of income against each band.

The O/M sub-contract covers four main business areas:

Teaching –The War Studies Group in the School of Humanities at King's College London, is sub-contracted by Serco to carry out the Academic Support Service. The contract's duration is ten years. The group provides a Dean, 45 lecturers and support staff to deliver teaching in War Studies. The team includes over 38 on-site academic staff linked to the Department of War Studies, based at King's Strand Campus 5. Taken together with the University of London's Centre for Defence Studies, also based at King's, the grouping will be the largest academic defence studies entity in Europe. The objective of the Defence Studies Department at JSCSC is to be a centre of excellence for teaching and research in defence studies. It also has MoD military staff working together with the academics.

Training Services – Serco carries out the defined non-technical services, ie library; IT services for both hardware and software (the majority of the software was specially developed by a consultant, and it controls the quality system within the College); audio visual (Serco has seven personnel controlling the classrooms, syndicate rooms and eight major lecture theatres with a capacity ranging from 40 to 800 persons). CCTV and TV cameras interconnect the theatres and a lecture can be simultaneously transmitted to all. Training resources cover all the resources related with the teaching activities ranging from secretarial and administrative support to graphics, photography, photocopying, sports and travel.

Estates - Serco carries out the security, facilities management and estate management services, providing all the grounds and buildings maintenance for the 100 acre site, which contain some 45 000 sq metres of college facilities, 290 family quarters, and sports pitches including two cricket grounds, an all weather hockey pitch, tennis courts, a rugby and football pitch as well as squash courts and a fitness suite.

Mess Services – Serco sub-contracted Eurest to carry out catering and cleaning services. The catering is prepared for 650 self-service persons per day and must also serve a further 450 people with a silver service dinner. Serco employs a staff of over 300. Within the organisational structure there is a specialised Department of Quality, Health and Safety.

Risk transfer

The following sections describe the most relevant risks that proved to have an adverse effect on the development of the JSCSC PFI project.

Social Risks

Impact on local infrastructure –There was, for example, only one pub in the village, but with the influx of service personnel and their families and the development of married quarters, new schools have also had to be provided.

The new facility required increased numbers of non-military staff. All of these new employees were required to undergo extensive security clearance checks. At one stage almost 50% of all potential recruits were rejected because of security issues.

To facilitate non-military staff employment Defence Management had to promote the use of local transport and invest in the local bus network.

Legal Risks

The concession contract (and 28 schedules) became an implied document in the construction contract. Therefore the requirements of an untried/untested PFI concession became an implicit feature of all contractual negotiations. The full implications of the implied terms were not recognised in the GMP. Hence the reason for constructors costs escalating from £88 million to approximately £120 million with no change in the GMP.

Planning and construction approvals – traditionally UK government departments have been exempt from Local Authority Planning Approval Procedures (although by custom and practice they have tried to comply).

The implementation of the Humans Rights Act (HRA) 1998 and its application in October 2000 gave local citizens a statutory right of appeal against infringements of personal rights. There is a strong body of legal opinion that government bodies (and by implication their agents such as Defence Management) cannot interfere with their rights by claims to Crown Immunity, as was previously done. Therefore any 'local' complaints about planning and/or construction approvals could potentially lead to a claim under the HRA 1998. No contingency/remediation from actions was contained in the contracts and therefore liability for compliance following any such action would be at the cost of the concessionaire or constructor. To date there is no knowledge of any action. However, there are social implications – for example, the temporary shortage of school places.

Economic and financial risks

The information brief was considered by the contractor to have been too poor, too loose and leaving too much room for interpretation to the lead designer. The consequence was that the contract was signed with inadequate information to correctly budget for the construction works.

Insufficient specification - At the start of construction only 5% of the drawings were available. Their quality was poor and made effective estimation impossible. This severely hindered the process, since the construction contract was budgeted according to the philosophy of GMP. At the time of signing the JSCSC construction contract not even 50% of the design was known, making it impossible to budget correctly. Even the choice of materials was made as construction progressed.

Service specifications – 'fit for purpose' was introduced in the construction sub-contract to characterise the service specifications of some construction items. It proved to be the origin for several problems, because the purpose can change depending on the client's point of view. The most striking example in this case is the 'fit for purpose' of a fire escape outside the bar. During the commemoration of Victory in Europe Day, people went out to see the flypast and the excessive weight caused the balcony to bend. It was designed for people to pass through not to stand, but the construction sub-contractor was forced to redesign and rebuild it as it was 'not fit for purpose.' It is important to note that the concept of 'fit for purpose' is uninsurable – no insurance company will cover this risk and it is therefore the constructor taking the risk and not the designer. The O/M sub-contract is a fixed price over 30 years, therefore inflation is the most important risk which the project is subject to.

Environmental risks

Flood water – The JSCSC was built to withstand an event that would occur once every hundred years (1:100). Unfortunately rain during the winter of 2000 was a 1:200 event, which caused flooding in the ground floor of the main building and the lagoon overflowing in spite of the drainage installed.

Contamination – The 1:200 event caused mains sewerage from on and off site to overflow into the containment lagoon. This lagoon (also a landscape feature) was then required to be pumped dry, with its previous stone lining removed, the whole cover decontaminated and then relined with a new stone lining and then refilled. These risks had to be rectified at no additional cost to the SPV/client and at the expense of the contractor..

Political and regulatory risks

Political advice – The JSCSC was a government flagship project. It was therefore susceptible to state-of-the-art industry practices such as the Zero Defects Initiative introduced following political advice from the then Department of the Environment Transport and the Regions and the Partnering Initiative (which arose following political advice from the Construction Best Practice Programme). These requests were aimed at obtaining a better project but constituted an additional and unanticipated risk for the companies not familiar with these management techniques.

Client change – During the negotiations there was a restructuring of the MoD that affected the normal procedures. The risk was that the changes in MoD personnel could bring changes to the project objectives. The personal interpretation of prior agreements could change either the scope or content of the project etc.

Planning regulations surprises – At the time of the signing of the contract Laing Construction assumed that the construction was approved by the local authority planning department. Laing was ready to start construction when it was informed that the building foundations would only be approved if two metres deeper than originally estimated. The immediate consequence was that the building's foundations reached areas of very bad sub-soil instead of rock as planned. Consequently, costs escalated.

Technological risks

Site conditions – One of the main problems was that the construction sub-contractor encountered site conditions related to ground water. Bad ground and excavations below the water table occurred in excess of all reasonable expectations at tender stage. The 1:200 floods caused a significant alteration in ground water levels and ground water content. The requirement for deeper excavations for foundations increased the volume and technical complexity of earthwork and sub-structure activity. The construction sub-contractor, having agreed a GMP with the concessionaire, did not lay-off its risk to their sub-contractors. The construction sub-contracts were largely 'traditional' and allowed sub-contractors to obtain reimbursement for variations in the works.

Poor drainage – One of the main problems encountered was poor drainage and this might have been related to the alterations requested by the planning department to lower the building by two metres. For phasing and access reasons the construction sub-contractor had already built the drainage network before knowing of the alteration and, although they were 'removed on paper' as the pipes were already in place, they were not physically removed. If this should cause local flooding problems in the future, there is the possibility of an action under the HRA by local residents. These local residents could even be the occupiers of the military family homes on site, who historically have been unable to take any actions against the MoD (and agents) because of claimed Crown Immunity. Once again Defence Management has an unknown potential liability.

Structural problems –There is evidence of major cracks along the expansion joints. This might be related to the bad soil conditions where the building stands. DM has the liability for this potential defect.

Co-ordination problems – There were sequencing and programming difficulties that, for example, led to the scaffolding sub-contract in the final account amounting to 87% over tender, which is approximately £500 000 in excess of the original estimate.

Labour shortages – The construction sub-contractor experienced serious labour shortages. The Swindon labour market was very buoyant with few people available for employment as carpenters, electricians, etc.

Latent defects – After delivery there was a three month period of snagging to correct construction defects. A final inspection was performed one year after delivery to assess if all defects are corrected. There remains a period of 12 years during which the construction sub-contractor will be liable for latent defects.

Poor design procedures – The review process was devised by the construction sub-contractor but it proved to jeopardise the progress of the construction works. It introduced delays because construction could only start when there were no comments from every partner. But 'No comment' did not necessarily mean, 'I agree', so problems could surface later.

Designs were not timely – Often the plans were revised, with the annotation that there were only minor alterations, which in reality would mean alterations in 50 items. The construction sub-contractor had the majority of the drawings in his possession only near the end of the construction period, while its delivery by the designer should have been smoothly phased from the beginning of construction.

All the problems encountered meant that the GMP of £88 million actually cost the construction sub-contractor £120 million.

Value for money

In the JSCSC project the PSC was worth £68 million. The project cost was estimated at £88 million but in reality construction costs escalated to £120 million. The public sector clearly got a good deal because now they own (or will own) a building at a fraction of its cost.

Key messages

Key learning points

Is PFI a sustainable model? The main lesson to draw from the JSCSC case study is to demonstrate how a PFI project can be considered successful from the financial aspect but at the same time be particularly ruinous for one partner – the construction sub-contractor in this instance. For PFI to be a sustainable solution it must demonstrate fairness and a good deal for all stakeholders. Contracts must have precise specifications as good quality information is essential. A good contract must be workable with good specifications. It must cover the technical deliverables and provide for an on-going continuous process that guarantees, over the long term, good procedures during the contract management. In the JSCSC PFI contract the construction requirements were too lose.

For the private sector

- There must be consistency in the strategies and objectives within the private sector team. It happened that from the concessionaire point of view the project was quite successful. But for the construction sub-contractor there was a large loss of money and the construction process itself was hectic
- The project team must be appropriately staffed by all stakeholders. The construction sub-contractor had formed a young and relatively inexperienced team to manage construction operations. This team was consistently understaffed and was unable to counteract the influence of the client's team members in the development and refinement of the design. It took the construction sub-contractor several months to realise that changes to the team composition were necessary, by which time significant decisions had been made that affected the completion of the project
- Good project management is essential. The co-ordination between the various construction sub-contractors was a serious problem in part due to delays in design
- Don't reassure the other partner too much. For instance, in order to reassure the MoD that the building met their wishes, the construction sub-contractor devised design procedures (a review process) that proved to be a hindrance leading to excessive delays and affecting the already tight construction schedule
- The project was rushed due to delays mainly in signing the contract. The college needed to open on a specific date otherwise an academic year would have been lost
- Do not sign any contract without having all planning permissions in place. The construction sub-contractor was informed just after the signing of the contract by the planning authority of the requirement to lower the building foundations by two metres
- Do not sign a contract where there is too much room for interpretation. The brief from the public sector was not clear enough and the construction requirements were too loosely designed. There was too much room for interpretation as to what the building was supposed to look like, consequently the key designer felt free to interpret the client's wishes
- Lawyers can be useful. The approach of the team and project manager of the construction sub-contractor was too task-oriented and probably accepted some terms and conditions wrongfully imposed
- Private companies cannot take an over-optimistic approach taking risks for which they are not prepared
- Value delivery network analysis. The co-ordination problems experienced by the construction sub-contractor originated in part by the huge number of sub-contractors involved. Subsequently they undertook a major revamping of the company culture to incorporate their sub-contractors' value chain management systems into their own. Effectively, they are simultaneously working within the company developing their value chain analysis of the whole supply chain and with their sub-contractors to make them aware of the advantages and helping them to set their own
- Efficiency increases are always possible. To increase efficiency the construction sub-contractor tried to implement a nationwide agreement on procurement with several preferential designated sub-contractors
- Unsuccessful projects hurt companies. In November 2000, John Laing plc announced the decision to sell Laing Construction plc and its subsidiaries. Negotiations took place between John Laing and O'Rourke plc and a Heads of Agreement was signed on 2 April 2001.

For the public sector

- A PFI project must be a good deal for all stakeholders. The public sector negotiated a good deal, with the project delivered on time, on budget and meeting the service on a guaranteed benchmark. However, this came at the expense of heavy losses for the construction subcontractor. This situation could not become a regular feature of PFI because if the private sector (where construction companies are included) perceives that they stand to lose money, then PFI will not be viewed as a sustainable solution to public service investment and delivery. There must be a perception of fairness throughout the process
- A good PFI contract must be workable and with good specifications, encompassing both the technical aspects and a good continuous review process. The main contract and the sub-contracts must form a coherent hierarchy.

Conclusions

A satisfactory project was completed and delivered to the client. The concessionaire is continuing to provide the O and M facilities and is receiving the annual schedule payments. However, the construction sub-contractor suffered major financial losses that contributed to the demise of the organisation.

Acknowledgements

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Case study 7

Newport Southern Distributor Road (NSDR)

Location: Newport

Project cost: £200 million

Sector: Transport – roads

Status: : Construction completed in August 2004

Sponsors and concessionaire/lead manager: Morgan-Vinci Ltd (Morgan Sindall Investment Ltd and the French construction group Vinci SA) have a 50/50 shareholding and equity stake)

Purchaser: Newport City Council

Contractual package: A DBFO contract between Newport City Council and Morgan – Vinci Ltd. The scheme is let under PFI with a concession period of 37 years. The project sponsors executed capitalisation for the project privately.

Background – history and objectives

General

The Newport Southern Distributor Road (NSDR) completed construction in August 2004. It is an upgrading project, consisting of alteration of existing roads to dual carriageway from Duffryn on the west of the city to the Coldra roundabout on the east. It includes a new bridge over the River Usk. The new dual carriageway is located between junctions 24 and 28 of the M4 and has been selected by the Department of Trade and Industry as a flagship case study.

The NSDR has been recognised by Newport City Council (NCC) as its highest priority scheme for the improvement of Newport's principal highway network. The NSDR scheme is designed to ease the congestion on the M4 and alleviate heavy traffic problems in and around Newport. It is also designed to improve the environment in the city centre, taking traffic away from residential areas, improving access to industrial areas in the east and south of the city and providing a new river crossing. The NSDR is the biggest local authority PFI scheme in Wales.

Scheme objectives

The scheme's objectives include:

- Improved access to southern areas of Newport
- Improved economic development and regeneration opportunities
- Significant contribution to the integrated transport objectives of Newport
- Improved environment of the inner residential areas
- Improved road safety and reduction in the number and severity of road accidents
- Enables traffic to avoid the town centre and inner residential areas.

Scheme description

The design of the scheme was progressing for some time under transport grant funding but the Welsh Office gave it PFI Pathfinder status in April 1997. The PFI (DBFO) scheme involves the design, construction, financing, operation and maintenance of a high standard distributor road around the periphery of Newport, including a major new crossing of the River Usk. The operation and maintenance concession is for 40 years.

The scheme generally follows the line of the existing A4042 carriageway west of the River Usk with an offline section north of the docks and similarly along the line of the existing A455, east of the river to the Coldra roundabout. A new crossing at the River Usk forms the central part of the scheme, linking the two roads to provide a direct and continuous carriageway and distributor road around the south of Newport.

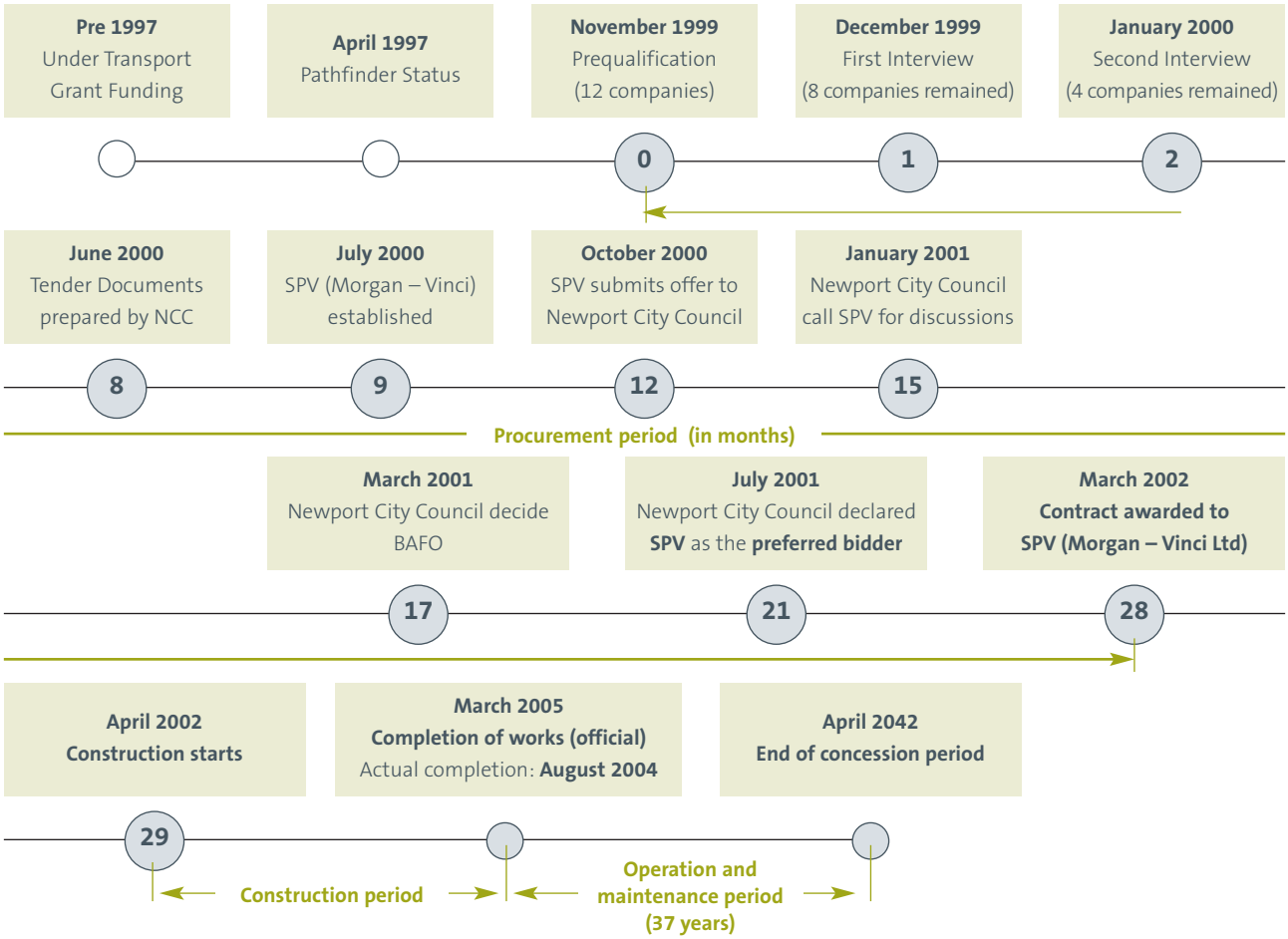
Other key details include:

- The length of the road is 9.3 km and is fully kerbed tarmac
- 40 year construction, concession, operation and maintenance period
- 10 year residual life at hand back period to NCC
- New upgraded highway bridges, subways, footbridges and retaining walls
- New 200 metre long steel, bow string arch (River Usk Crossing).

Bidding process – chronology of key events

The key dates and events of the development of the NSDR are given in figure 3.3.

Figure 3.3: Key dates and events in NSDR



Construction phase

The project was completed in August 2004 – eight months in advance of the scheduled completion date March 2005.

Operational phase

Introduced eight months earlier than anticipated. The scheme is working to an agreed shadow toll payment mechanism.

Risk transfer

The risk allocation and risk acceptance by the prospective bidders was a major problem on this project. The risk allocation matrix was an integral part of the bidding documents which included 57 different risks, grouped under:

- Construction risks (17 items)
- Ground condition risks (five items)
- Pre-contract risks (four items)
- Third party risks (two items)
- Design risks (five items)
- Legislative, financial and economic change risks (seven items)
- Operation and maintenance risks (17 items).

Initial views on risk allocation in the bidding process were:

- Compliance with statutory/legal requirements and planning process
- Pollution/contamination
- Compliance with existing contracts
- Benchmarking of insurance premium
- Other major risks.

Value for money

Public sector comparator

During the procurement phase the PSC was developed. This development took the form of more accurate costing for both the procurement and operating aspects contained in the preliminary PSC. The aim of this work was not to alter the essential technical characteristics of the outline PSC used in the business case for the NSDR project, but to reduce the degree of uncertainty in the costing. The PSC calculated by Newport City Council was approximately £49 million. The capital expenditure (CAPEX - New Works Contract) value is £55 million. Although there was an approximate £6 million difference between the PSC and the CAPEX the contract was signed between parties with the capital expenditure value. The information given by a SPV respondent explains why NCC chose PFI procurement:

'To me the explanation is easy. NCC had no transport grant funding to construct the road and PFI was the only show in town. If NCC did not choose PFI no road would be constructed in Newport. I am sure that if the NCC had funding for the project they would not choose PFI' (Interview with SPV respondent, 19 May 2004).'

Value for money

Although there is no information from NCC about the VFM evaluation of this project, the decision to finance the project through a PFI scheme was probably made because no alternative options of financing were available.

This raises a fundamental question for such a PFI contract: what is value for money?

'*...value for money means two things: (a) long term quality, and (b) cost effectiveness. And this project satisfies these two important issues that the council requires*'

Best value for road projects is referred to in the EU Directive as '*most economically and advantageous tender*' (British Highways Agency, 1997) which also reflects the respondent's understanding of best value. Another respondent added:

'*Principally the council will get at the end the objectives set and the quality requested in the output specification. The council will have (a) a good infrastructure quickly constructed; (b) GMP for the overall life of the project is an advantage for the client for his affordability calculation; and (c) a durable quality output product. All of these issues are value for money for the client*'

Best value selection involves the evaluation of technical and management factors in addition to cost, as opposed to low-bid selection, which involves only cost comparison of responsive bids from the bidders with PSC. Value for money is not only the cost implication but an aggregation of issues such as quality, price, technical merit, aesthetics and functional characteristics, running costs, cost effectiveness, technical assistance, delivery date, etc.

Key messages

For the private sector

- In DBFO road projects the competitive proposal and negotiation process, for the benefit of the council, requires the contractors to be innovative and cost conscious
- The confidential discussions in the negotiation process in DBFO enables contractors to benefit from innovations they propose without concern that their ideas will be shared with competitors. Contractor-initiated changes are integrated into the procurement process as alternative proposals and occurring during the procurement process before contract award combines the issues of risk and reward within the negotiations and develops more openness to the council and SPV objectives
- Benefits from long-term cash flow and the ability to manage its supply -chain
- Improved integrated solutions and project development methodologies
- Accumulated the cost efficiencies and whole-life cost analysis in design and sustainable construction.

For the public sector

- The council experiences increased innovation and more competitive pricing
- The whole DBFO procurement process results in best value to the council
- Benefit of long term relations and managing its service delivery
- The possibility open to the council for best value selection which has the potential to provide for the selection of higher quality contractors and lowering costs by rewarding technical innovations
- Creates less adversarial and claims-oriented projects developing a higher level of honesty, openness and trust with the private sector
- A whole-life approach to financing, designing, constructing and operating and maintaining the NSDR project
- Transfer the risks to the private sector that give value for money to the public sector
- The DBFO is a performance contract which provides the council with a performance specification that must be met, by employing whatever means the private sector determines to be most economical.

Conclusions

The following key points were identified in this project:

- Early contractor involvement (construction sub-contractor was able to work with the council and supply chain throughout the bid process to identify the areas to add value)
- Partnering mechanism (the scheme was delivered using informal partnering mechanisms and the co-located council/designer/contractor team facilitated significant improvements by allowing all parties to work together early in the scheme's development and design)
- The construction sub-contractor, through collaborative working with the council, designer and supply chain, optimised processes and managed risk in order to deliver the NSDR scheme months ahead of the council's original programme
- Formal feedback mechanisms employed in the project ensured that council requirements were met and that partnering and team-working arrangements continued to deliver best value
- Innovation was encouraged throughout the scheme with both the designer and steel fabricator being given incentives to generate innovative solutions
- Construction sub-contractor worked closely with the council at all stages (tender, BAFO and financial close) to manage costs within their budget. The construction sub-contractor actively sought savings throughout the duration of the scheme through creativity, innovation and continuous improvement
- The co-location of the project team and several supply-chain partners has facilitated regular interfaces and efficient decision-making throughout.

The project team proactively drove the creativity, innovation and continuous improvement throughout the procurement and construction process. This meant the team:

- Beat the Newport City Council's completion programme by approximately eight months
- Achieved £6.35 million total savings and value adding in the scheme through early construction sub-contractor involvement
- Won the George Gibby Award for the Usk Crossing Bridge (awarded by the Institution of Civil Engineers in Wales)
- Won the Green Apple Award for sustainable construction and was crowned National Champion for Environmental Best Practice in the Building and Construction sector.

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Case study 8

A92 upgrading between Dundee and Arbroath

Location: Angus, Scotland

Project cost: £150 million

Sector: Transport – roads

Status: Under construction

Sponsors and concessionaire/lead manager: Claymore Roads Ltd. (Morgan=Est, Barclays Bank)

Purchaser: Angus Council

Contractual package: A DBFO contract between Angus Council and Claymore Roads Ltd. The scheme is let under PFI with a concession period of 30 years. The project sponsors executed capitalisation for the project privately.

Background – history and objectives

General

The A92 between Dundee and Arbroath is a vitally important strategic route for the east coast of Scotland, serving the towns of Dundee, Monifieth, Carnoustie, Arbroath and Montrose. It also serves as a major route for commercial traffic to these towns, and the ports of Arbroath and Montrose. The existing single carriageway road carries up to 18 000 vehicles per day. The traffic volume increase and the accident record of the existing A92 and associated roads is considered to be a major factor in the continuing decline in economic activity in the area. A consequence of these problems on the A92 is that traffic is currently diverting to the less suitable coastal corridor route – the A930. The affected local authorities – Angus Council and Dundee City Council – are aiming to improve the safety, quality of life and economic opportunity in the area by upgrading the A92 and carrying out other improvements within the A92/A930 route corridor.

Objectives

The councils identified the following key objectives for the route corridor:

- Reduction in accidents
- Journey time reliability
- Divert traffic from minor roads to the A92
- Improve economic regeneration
- Improve junctions
- Improve public transport.

The scheme that is currently being promoted has been tailored to meet these objectives. Full advantage has been taken of innovative procurement routes to ensure that the project will provide value for money and high quality of service to the taxpayer and the local community. Further evidence of the councils' commitment to innovation is highlighted by the fact that they have successfully proposed the project as an Egan (M4I) Demonstration Project.

Scheme description

The bulk of the scheme will involve the upgrade of the A92 to dual carriageway standard. A mostly on-line solution has been chosen to maximise re-use of existing road. The upgrade works include:

- Removal of traffic from Muirdrum and bypass the village from south
- Removal of right turn movements by constructing grade-separated junctions
- Construction of an A92/A930 link from Upper Victoria to Carnoustie
- Construction of a bypass around Barry village on the A930
- Realignment of the A930 between Muirdrum and Carnoustie
- Alignment improvements to various side roads.

Central government Transport Challenge Funding has been secured by the councils to assist in the preparation of the project. In 1998, technical (Babtie Group), legal (Shepherd & Wedderburn), and financial (KPMG) advisers were appointed to assist the councils in taking the preferred route forward as a DBFO contract. This method of procurement was seen as the only viable financing option which would allow the councils to achieve their objectives within the desired timetable.

Scheme details

- Upgrading 18.7 km of the existing single carriageway to a kerbed 7.3 m dual (2x2 lanes) carriageway with central reserve safety fencing
- Upgrading and realignment of around 14 km of side roads

Construction operation involves:

- Excavation of approximately 900 000 m3 of material (250 000 m3 of unsuitable material to be disposed of offsite)
- Laying approximately 350 000 tonnes of flexible surfacing material
- 2.5 m wide verges at sides and 4.5 m wide with safety fencing central reserve verge
- Four roundabouts, five grade-separated junctions and 14 restricted access junctions

- 22 reinforced concrete structures including bridges and culverts
- A combined footway/cycleway along the full length of the route, substantial accommodation works for local landowners and approximately £3.5 million of statutory undertakers diversions (water, gas, electricity and telecommunications).

Rural focus and public transport

The project is not viewed purely as a road improvement project by the councils. The councils are ensuring that the scheme fits within the government's integrated transport policy and maximises the opportunities created by the upgrading to implement an integrated transport system within the largely rural route corridor. The aim is to provide alternative transport options to rural as well as urban communities, reducing reliance on the car.

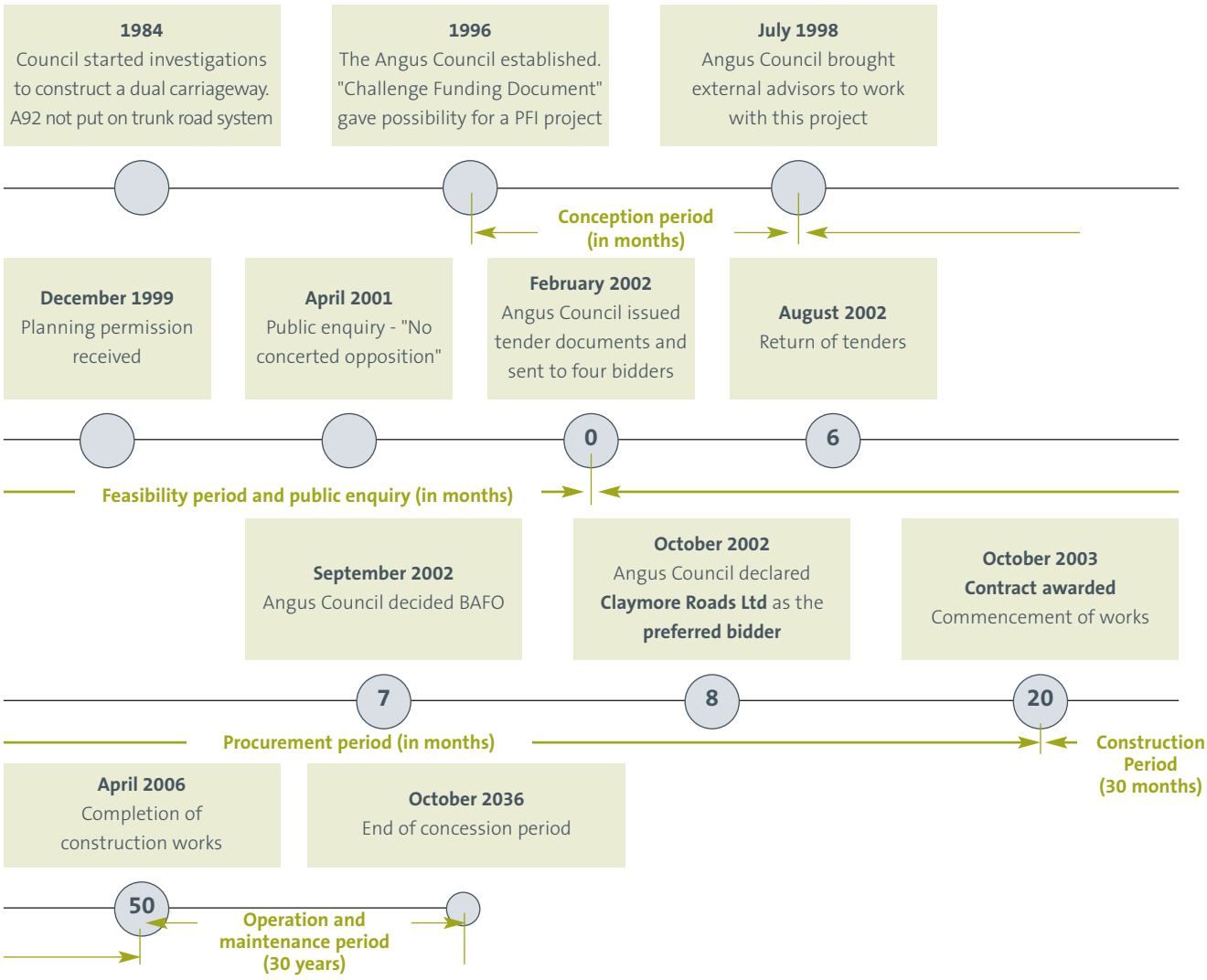
The upgrading of the A92 and the other roads included in the scheme will bring significant benefits to all modes of transport. In terms of public transport, the improvements will allow bus operators to provide a more consistently reliable service along both the A92 and the A930. This improvement in journey time reliability will be facilitated by the reduction in accidents on both routes and the removal of congestion, particularly at peak periods. It is predicted that this will encourage more people to use buses rather than cars.

This project demonstrates how local councils can use innovative procurement methods (DBFO) to achieve their transportation objectives.

Bidding process – chronology of key events

The key dates and events for A92 are given in figure 3.4.

Figure 3.4: Key dates and events - A92



Construction phase

The construction is undertaken by Claymore Roads Ltd. (a special purpose vehicle established between Morgan Sindall Investment Ltd. and Barclays Bank). The A92 PFI (DBFO) contract is between Claymore Roads Ltd and Angus Council (the granting authority).The new works contractor is Morgan=EST, who have past experience in road and infrastructure construction. The consultants in the project are listed below.

Consultants to the council:

- Technical consultant: Babtie Group
- Legal consultant: Shepherd & Wedderburn
- Financial consultant: KPMG.

Consultants to the SPV:

- Design consultant: Faber Maunsell & Gillespies
- Legal consultant: Masons
- Financial consultant: Deloitte & Touche
- Traffic consultant: Steer, Davies & Gleave
- Checking consultant: Tony Gee & Partners.

Construction sub-contract

The new works sub-contract is between Morgan=Est and SPV. The conditions of contract are based on the client model, developed with the SPV, Claymore Roads Ltd. The construction sub-contract will require the SPV to design, construct, commission and complete the road for a fixed GMP, lump-sum basis in accordance with the project agreement (PA) and with the agreed programme. A number of specialist sub-contractors are required to enable Morgan=Est to fulfil its commitments.

These include:

- Design
- Checking of design
- Site clearance
- Fencing and environmental barriers
- Safety fencing
- Drainage
- Earthworks
- Road pavements
- Road layout
- Kerbs, footways and paved areas
- Signs and road markings
- Lighting and electrical works
- Structures
- Environment and landscaping.

Design sub-contract

The new works sub-contractor Morgan=Est has engaged consultants through sub-contracts as required by the PA. The design sub-contract is signed with FaberMaunsell (the designer). The designer undertakes the design of the project, including the production of the design statement, preliminary design, final design and the construction drawings. Any specialist design sub-consultants utilised by the designer will be employed directly by him. The designer also fulfils the role and responsibilities as defined in the Construction Design and Management (CDM) Regulations, 1994. Details of this sub-contract are not available.

The designs prepared by FaberMaunsell & Gillespies have been checked by an independent checking consultant (Tony Gee & Partners). The checker was appointed specifically to:

- Check and approve the new works drawings prior to their issue for construction
- Issue corresponding design check certificate
- Maintain a register of design check certificates
- Prepare progress reports.

Operational phase

The operation and maintenance contractor is Ringway Highway Services.

Operation and maintenance sub-contract

The SPV (Claymore Roads Ltd.) entered into an O and M sub-contract with Ringway Highway Services to operate and maintain the roads in accordance with the standards, specifications, procedures and other requirements as set out in the PA. Performance points will be allocated on a pass through basis from the SPV to Ringway in the event of failure to operate and maintain to the required standards.

The relevant project-specific work instructions for the O and M sub-contractor are:

- Routine maintenance
- Emergency call-out
- Winter maintenance
- Helpline
- Abnormal loads
- Vehicle safety fencing
- Safety inspection procedure
- Availability monitoring patrol.

Risk transfer

The risk allocation and risk acceptance by the prospective bidders was a major obstacle on this project. The risk allocation matrix was an integral part of the bidding documents which included 57 different risks which were grouped under:

- Construction risks (17 items)
- Ground condition risks (five items)
- Pre-contract risks (four items)
- Third party risks (two items)
- Design risks (five items)
- Legislative, financial and economic change risks (seven items)
- Operation and maintenance risks (17 items).

Initial views on risk allocation in the bidding process were:

- Compliance with statutory/legal requirements and planning process
- Pollution/contamination
- Compliance with existing contracts
- Benchmarking of insurance premium
- Other major risks.

The risk allocation matrix is shown overleaf.

Risk description	Risk ownership		
	Granting authority	SPV	Shared
Construction risks:			
1. Environmental pollution		✓	
2. Results of further environmental studies		✓	
3. Archaeology finds during construction		✓	
4. Protester action		✓	
5. Delay to construction progress/completion		✓	
6. Adverse weather		✓	
7. Insufficient land (beyond land made available and access rights)		✓	
8. Public utilities		✓	
9. Contractor insolvency		✓	
10. Construction inflation variance		✓	
11. Construction noise		✓	
12. Pest damage		✓	
13. Traffic management		✓	
14. Road safety audit		✓	
15. Accommodation works		✓	
16. Planning amendments/delay (compliant bid)	✓		
17. Planning amendments/delay (variant bid)		✓	
Ground condition risks:			
18. Soft ground		✓	
19. Hard ground		✓	
20. Ground water		✓	
21. Mine workings		✓	
22. Rock quality and presence		✓	
Pre-contract risks:			
23. Change in interest rate	✓		
24. Employee requirement changes	✓		
25. Scheme cost increases	✓		
26. Inflation risk		✓	
Third party risks:			
27. Relevant authorities		✓	
28. Interested parties		✓	
29. Change in quantities		✓	
30. Changes from initial design		✓	
31. Change in design standards	✓		
32. Employers' requirement changes	✓		
33. Council and contractor solution changes		✓	
Legislative, financial and economic change risks:			
34. General change in law			✓
35. Interest rate risk (post financial close)		✓	
36. VAT status risk		✓	
37. Inflation risk		✓	
38. Availability risk		✓	
39. Traffic usage risk		✓	
40. Performance risk		✓	
Operation and maintenance risks:			
41. Unforeseen defects (including pavement failure)		✓	
42. Accident damage		✓	
43. Vandalism		✓	
44. Weather		✓	
45. Traffic loading		✓	
46. Renewal and replacement of structures and infrastructures		✓	
47. Utilities access		✓	
48. Replacement of drain, signs, barriers, etc.		✓	
49. Pavement patching		✓	
50. Existing structures failure			
51. Hand back inspections		✓	
52. Road safety audits		✓	
53. Staff costs		✓	
54. Inadequate performance of sub-contractors		✓	
55. Force majeure	✓		
56. Termination for contractor default		✓	
57. Other termination	✓		

Value for money

Public sector comparator

The PSC was developed during the procurement phase. This development needed to take the form of more accurate costing for both the procurement and operating aspects of the PSC. The aim of this work is not to alter the essential technical characteristics of outline PSC used in the business case for the A92 Project, but to reduce the degree of uncertainty in the costing. The PSC calculated by Angus Council was approximately £43 million. The capital expenditure (CAPEX – new works contract) value is £53.54 million. Although there was an approximate £10 million difference between PSC and CAPEX, the contract was signed between parties with the capital expenditure value. The information given by a council representative responsible for site works explains why this 'unexpected' difference occurred.

'At the beginning of the bidding process there were four bidders, but shortly afterwards one of the bidders withdrew from the bidding. The remaining three went through the tender process. Probably, the low contract value and the high bidding costs were the reason why few companies were interested in participating in the bidding. Since no other bidders were available the council had to choose the lowest bid which was still much higher than the PSC.'

Value for money

There is no information from Angus Council about the value for money evaluation of this project. The decision to finance the project through a PFI scheme was probably made irrespective of this characteristic having no better options of financing.

The project for the upgrading of the A92 started in 1984 with the project agreement signed with the preferred bidder on 30 September 2003. The upgrading project could not be achieved within the public sector procurement regime due to a lack of government funding. Angus Council had no other alternative to private finance. In the words of an informant:

'For this particular road project there was no other alternative but PFI to build it. If the council did not accept PFI the A92 project would not be realised. The only reason why Angus Council chose PFI was because of lack of funding from central government for this particular project. Therefore, the council selected the only available alternative.'

Best value for road projects is determined by the EU Directive as being the 'most economically and advantageous tender' (British Highways Agency, 1997). As the respondent added,

'Principally the council will get at the end the objectives set and the quality requested in the output specification. Although there is £10 million difference between the PSC and the preferred bidder's price, I see the PFI deal as a "political value for money" for the A92 upgrading project'.

Best value selection involves the evaluation of technical and management factors in addition to cost, as opposed to low-bid selection, which involves only cost comparison of responsive bids from the bidders with PSC. Value for money is not only the cost implication but an aggregation of issues such as quality, price, technical merit, aesthetics and functional characteristics, running costs, cost effectiveness, technical assistance and delivery date.

According to Clause 43 of the PA, the SPV shall carry out a review of operations in the concession period on each of the 5th, 10th, 15th, 20th and 25th anniversaries of the Permit of Use Date (the 'VFM Review Date').

The VFM review shall consider and report on:

- Any material innovations in technology which have come to the attention of the SPV and which could enhance the operations
- Jointly with Angus Council, the O and M requirements in order to assess whether any alteration in them would represent increased VFM for both parties.

The VFM review report submitted by the SPV shall include:

- The methodology of the review
- Any material innovations in technology or material efficiencies in best working practices relevant to the delivery of the operations which represent VFM
- Any proposed changes to the O and M requirements.

VFM review and Internal Rate of Return (IRR) clawback provisions have been included on five yearly cycles after the permit to use (PTU) date to:

- Secure continuous assessment of whether improved VFM could be achieved by innovation
- To recover 50% of 'super profits' gained by the SPV subject to there being no double-counting with refinancing and also subject to reconciliation of any super-profit recovery with under performance over the life of the project. The threshold equity IRR figure above which super-profits are shared was negotiated to 22.5%.

Key messages

The key messages are the same as in the NSDR project (case study 7).

Conclusions

The construction sub-contractor's 'early solutions together' philosophy has been a guideline during the execution of the works to find the quickest, most effective way to make the A92 an efficient route.

Affordability was a top priority for Angus Council and in order to satisfy this issue Morgan=Est identified a number of innovative ways to improve time and cost savings for Angus Council. These innovations were grouped under three headings:

- Sustainable solutions
- Time savings
- Re-engineering the road.

Sustainable solutions: The key requirement of the A92 construction was the large quantities of material needed to form the road structure. Redundant land in the form of a disused airfield provided a 'sustainable solution' for sourcing the necessary material which was recycled and used to form an improvement layer for the road. The unsuitable material from road excavation was used to fill the hole left in the airfield. The fill material was then covered with topsoil creating a new field that could be farmed.

Time savings: The early sourcing of suitable raw material meant that Morgan=Est could work through the winter, co-ordinating the scheme four weeks ahead of schedule.

Re-engineering the road: Morgan=Est has achieved further cost efficiencies by re-engineering the local authority roads around the scheme and therefore removing the need for an underpass which resulted both in money and time saving.

By working closely with the client and other stakeholders, Morgan=Est's team has been able to add value by developing solutions that have saved time and money to the benefit of Angus Council, Morgan=Est and the local economy.

Acknowledgements

The original case study data was prepared by Rıfat Akbiyikli, School of Construction and Property Management, University of Salford. The authors are grateful to all staff from Morgan=EST Rugby, Claymore Roads Ltd, and Angus Council for their valuable contributions, opinions and assistance received in preparing the case study.

The stimulants and obstacles to success within PFI projects

chapter four

In response to the findings of the Latham and Egan reviews, a host of UK government-supported initiatives and programmes have been established to drive radical improvements in construction, including the Construction Research and Innovation Strategy Panel (CRISP), Partners in Innovation (PII) and Movement for Innovation (M4i).

A critical factor claimed for PFI is the ability to bring improved innovation into the project delivery. This improved innovation is intended to enhance project success. Without innovation a business lacks competitive advantage. Construction firms have to improve their capabilities in managing innovation if they are to build reputations for technical excellence that set them apart from more traditional players. Moreover, successful innovation enables construction firms to respond to the aspirations and needs of society and clients, whilst improving their competitiveness in dynamic and abrasive markets. The PFI case study of Victoria Dock Primary School gives an indication of how a construction organisation can achieve competitive advantage by changing the way it views its own business activities and then responds to local social needs.

Generic research into the effects of the working environment on creative and innovative behaviour has produced strong findings, which suggest that innovation can be increased in organisations through the management of variables that influence behaviour. Specifically, variables in the form of social influences (such as organisational culture and climate) and contextual issues (such as task and time constraints) act as either stimulants or obstacles to the creative behaviour of individuals in organisations.

The social and contextual factors that influence the creative and innovative behaviour of individuals in construction organisations within the limited and constrained context of the PFI project have tended to be ignored. No previous study investigating the influence of work environment factors on the creativity of individuals has been undertaken in this PFI context. It is hoped that by highlighting the importance of identifying these situational variables that improvements in the management of PFI can be made. PFI remains a limited market segment of the construction industry. However, because of the nature of the PFI arrangement a PFI 'project' could involve any part of the construction industry, and as such it is a useful microcosm of the entire sector.

Despite growing interest in innovation in construction some commonly held perceptions still exist:

The construction industry is not very innovative.

Construction is a 'backward industry' and, in particular, one that fails to innovate in comparison to other sectors.

However, these perceptions do not do justice to the importance of innovation in the PFI industry. For all construction companies there are the eternal pressures from clients to improve quality, reduce costs and speed up construction processes. The benefits of PFI innovation in construction include:

- The improvement of working conditions and improved health and safety
- Lower construction costs
- Quicker construction times
- Improved risk management
- Better value for money for the clients.

Furthermore, as a result of innovation in PFI construction, certainty is now being put forward as a fourth competitive dimension to be added to the existing dimensions of cost, quality and time. But PFI innovation is not solely about competition and organisational performance; issues of customer choice, social and environmental sustainability and quality of life are equally important.

Latham, Egan and Fairclough have all suggested several problems in the construction industry, including PFI, which could be overcome through innovation and creative problem solving. For example, the findings of the Egan report called for:

- Increased turnover and profitability for construction organisations
- Increased productivity at all levels
- An increased number of projects to be completed on time and within budget
- A reduction in capital construction costs
- A reduction in the time from client approval to practical completion

- A reduction in the number of defects on hand-over by contractor to the client.

At the external level, professional bodies and clients can influence PFI innovation and have a role in supporting:

- A culture where people are open-minded, willing to accept change, flexible, and free from dogma
- Flexibility in the lines of communication and structures that allow top-down, bottom-up and lateral communication within the organisation
- A risk-tolerant climate where it is accepted that lessons can be learned through mistakes
- A 'knowledge-friendly culture' where people are not inhibited about sharing knowledge and do not fear that sharing knowledge could cost them 'power and influence' or even their jobs
- An 'iterative-learning' culture where the lessons learnt on one project are freely available for everyone to assimilate.

At the PFI project level, increased co-operation among organisations involved in construction is required. This will ensure innovation efforts within particular projects are co-ordinated and result in the delivery of a successful project. The HOT influence in projects is also a potential variable for creative idea sharing and innovation.

Companies should give employees some freedom in their workload so that they have an opportunity to develop and experiment with new ideas. Training and development plays an important role in the successful development of PFI innovation, whilst a lack of or insufficient coherent information and a lack of or insufficient resources, such as finance, can be barriers.

Stimulants and obstacles at all levels

Table 4.1: PFI stimulants

External environment level
- Clients
- Competition
- Government
- Professional bodies
- Sharing of ideas in the industry
- Supply chain

Organisation level
- Encouragement of creative problem solving
- Fair, constructive judgement of ideas
- Reward and recognition for creative work
- Mechanisms for developing new ideas
- Clear shared vision
- Encouragement of risk-taking and risk management
- Attraction of creative people

Project level
- Supervisory encouragement
- Clear and appropriate goals
- Motivation and commitment to the project work
- Diverse and suitable background of individuals
- Good communication
- Openness to new ideas
- Trust and help for others within the team
- Constructive criticism of ideas

Job role level
- Challenging and interesting tasks and projects
- Time control over work
- High autonomy
- Freedom
- Access to appropriate materials and facilities
- Access to necessary information
- Adequate funds
- Training and development
- Creativity training
- Creativity element of job description and appraisal
- Conducive physical environment

Table 4.2: PFI obstacles

External environment level
- Client procurement route
- Coalition nature of construction
- Lack of communication
- Legislation

Organisation level
- Internal political problems
- Destructive internal competition
- Harsh criticism of new ideas
- Conservatism and avoidance of risk
- Rigid structures and strict processes
- Lack of mechanisms for developing new ideas
- Lack of rewards and recognition

Project level
- Format of project contract
- Rigid project demands
- Segmentation of project disciplines
- Poor collaboration
- Poor communication
- Lack of openness and trust
- Poor project management

Job role level
- Extreme time pressures
- Unrealistic expectations for productivity
- Distractions from creativity
- Financial constraints

Table 4.3: Detailed stimulants in PFI case studies

Identified stimulants (* identified as significant)	Altcourse Prison	Tagus bridge	JSCSC	Victoria Dock Primary School
External level				
Clients				*
Competition				
Government				
Professional bodies				
Sharing ideas in the industry				
Supply chain				
Organisational level				
Encouragement of creative problem solving		*		
Fair, constructive judgement of ideas				
Reward and recognition for creative work				
Mechanisms for developing and implementing new ideas			*	
Clear shared vision				*
Encouragement of risk taking & risk management				
Attracting creative people				
Project level				
Supervisory role models				*
Clear, appropriate goals			*	*
Support for work group and individual contributions from supervisor				
Motivation and commitment to the project work		*		*
Diverse and suitable background of individuals				
Good communication				*
Openness to new ideas				
Trust and help for others within the team				
Constructive criticism of ideas				
Job role level				
Challenging and interesting tasks and projects	*	*	*	*
Time control over work				*
High autonomy				*
Freedom				
Access to appropriate materials and facilities		*		
Access to necessary information				*
Adequate funds	*	*		*
Training and development				
Creativity training				
Creativity in job description				
Conducive physical environment				
Totals	**+2**	**+5**	**+3**	**+12**

Table 4.4: Detailed obstacles in PFI case studies

Identified obstacles (**x** identified as significant)	Altcourse Prison	Tagus bridge	JSCSC	Victoria Dock Primary School
External level				
Client procurement route	x		x	
Coalition nature of the industry	x	x	x	
Lack of communication		x	x	
Legislation			x	
Organisational level				
Internal political problems	x			
Destructive internal competition			x	
Harsh criticism of new ideas	x			
Conservatism and avoidance of risk	x			
Rigid structures	x			
Strict processes and procedures	x	x	x	
Lack of mechanisms for developing and implementing new ideas	x		x	
Lack of rewards and recognition				
Project level				
Format of project contract	x	x	x	
Rigid project demands	x	x	x	
Segmentation of project disciplines	x	x	x	x
Poor project management			x	
Lack of communication and collaboration				
Lack of openness and trust		x	x	
Job role level				
Extreme time pressures	x		x	
Unrealistic expectations for productivity	x	x	x	
Distractions from creativity				
Financial constraints	x	x	x	x
Total	**-14**	**-9**	**-15**	**-2**

It is possible to identify the stimulants and obstacles that have occurred in some of the preceding case studies. Relevant features are only identified if they create a 'significant' difference to the more 'traditional' approach to construction. So a feature has been identified only if the two following conditions are met:

- The feature has materially affected the risk neutrality of the project
- The feature has materially affected the substantive completion on time, quality and price.

The four case studies have been evaluated by a simple numeric count of the positive (*) stimulants and the negative (x) impediments/obstacles that have been identified by the evaluation of the case study details. No work has yet been executed to quantify the proportional contribution of each feature. It treats all features in an identical manner. Table 4.5 presents the numeric count and figure 4.1 presents the evaluation. The most effective projects occur when the stimulant (solid line) is as far from the axis as possible, and the impediment line (dotted line) is as close to the central axis as possible.

Table 4.5: Summary of collated stimulants and obstacles by project

	Altcourse Prison	Tagus Bridge	JSCSC	Victoria Dock Primary School
Stimulants	+2	+5	+3	+12
Obstacles	-14	-9	-15	-2
Total	-12	-4	-12	+10

Figure 4.1: Comparison of stimulants and obstacles – by case study

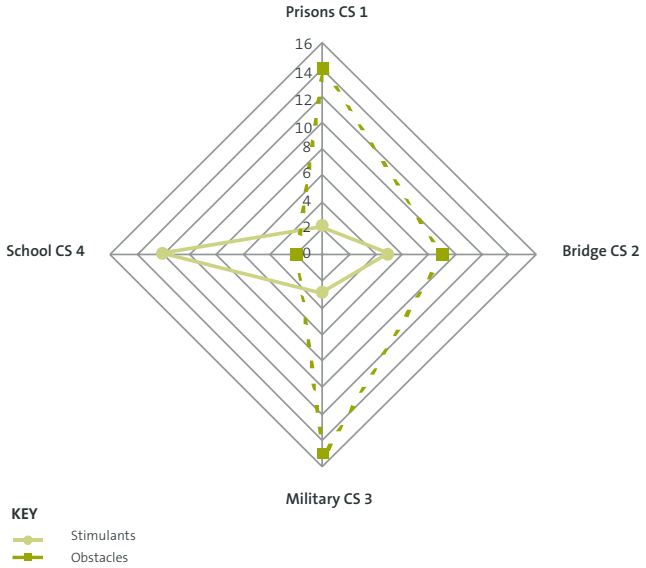
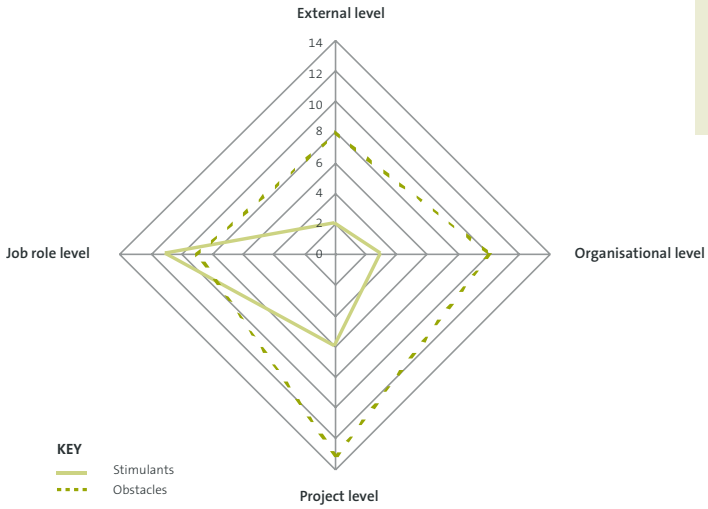


Figure 4.2: Hierarchical aggregated stimulants and impediments



Where the obstacles exceed the stimulants (as in the prison, bridge and JSCSC case studies) there is an indication that the level of success in the project has been impaired.

Table 4.6 presents the numeric evaluation of stimulants and obstacles by hierarchical level. The most effective projects would again occur when the stimulant (solid line) is as far from the axis as possible, and the obstacle line (dotted line) is as close to the central axis as possible. However, in these case studies there is an indication that the inter-relationship between the levels is also important. The findings suggest the obstacles are more significant in the descending order of external, organisational, project and role, whilst the stimulants appear to be more important at the organisation and project levels than at the external or job role levels. No work has yet been executed to quantify the proportional contribution of each level. It treats all levels in an identical manner.

Table 4.6: Summary of collated stimulants and impediments by hierarchical level

	External level	Organisational level	Project level	Job role level
Stimulants	+2	+3	+6	+11
Obstacles	-8	-10	-13	-9
Total	-6	-7	-7	+2

What can also be identified is that in three of the case studies the numeric count of the obstacles significantly outnumbers the stimulants and the aggregate obstacles count exceeds the stimulants at all but the job role level. In three cases the construction contractor suffered significant cost over-runs. However, the concessionaire with a GMP obtained virtually complete protection against these cost over-runs. The client was equally protected by the concession arrangement.

In the cases of the prison and military projects the stimulant and obstacle count is very similar (+2, -14, +3, -15), however an evaluation of the 'success count' of each project (a crude measure of the perceived successful delivery of the projects) would yield a significantly different response. For instance, the prison project would be deemed overall to be more successful, by all parties, than the military project. This would suggest an imbalance between the proportional contributions of individual features to the deemed success or otherwise of a project.

A further detail is that the higher level stimulants, i.e. those at the external and organisational level, are noticeable largely by their absence, whilst the obstacles to innovation occur at all levels in the hierarchy. One interpretation of this feature is that the senior management associated with PFI projects have not evolved sufficiently to recognise the difference between a major 'traditional' project and a major PFI project. It appears therefore, that senior management have not changed their patterns of behaviour despite the change in procurement process.

Conclusions

The empirical study of the four case studies suggests that to date the 'claimed' innovation associated with PFI is largely unrealised. There appears to be significant 'untapped' scope for improving the innovation within PFI projects and hence improving project success.

The model of obstacles within PFI should be examined by all parties. They should verify that all obstacles have been examined and that they are satisfied with their removal as far as is practicable for a particular project.
The stimulant model should be used in a similar manner and parties should verify that the stimulants have been incorporated as far as is practicable.

Given this verification, it is expected that a subsequent review of similar cases would yield an analysis that was predominantly positive, rather than the currently achieved balance that is predominantly negative. Further evaluation of completed PFI projects utilising the model will give an indication of whether the levels of innovation are improving as further experience of PFI is accumulated.

The improvements sought by the Egan Agenda have been examined within the PFI cases studies, concluding as follows:

- *Increased turnover and profitability for construction organisations*. The SPV in each of the case studies has improved turnover and profitability. However, the construction sub-contractors have suffered in terms of profitability because of the limitations contained within the provision of a GMP
- *Increased productivity at all levels*. It is difficult to directly ascertain productivity improvements from within the cases studies. However, by using completion dates as a substitute measure then most projects have been delivered prior to the target delivery date indicating that overall productivity exceeded initial expectations
- *An increased number of projects to be completed on time and within budget*. Delivery to the project sponsor within time and budget has been improved beyond that typically experienced by traditional construction procurement. Delivery within budget for the SPV has been achieved because of the GMP mechanism contained in the construction sub-contracts. Delivery within budget by the construction sub-contractor has failed to be achieved in two case studies
- *A reduction in capital construction costs*. Because of the structure of the financial model within PFI it is difficult to directly ascertain capital construction cost reductions. However, the promotion of value engineering and risk management techniques has been identified as contributing to cost savings in whole life cycle costs for each of the four case studies
- *A reduction in the time from client approval to practical completion*. This has failed to be achieved within any of the case studies. The complexity of the negotiations involved in achieving financial closure on a PFI project has resulted in an increase in time between clients' initial approval and commencement on site. This has been offset by significantly reduced site construction times. The utilisation of 'fast-track' construction is inextricably linked to PFI construction
- *A reduction in the number of defects on hand-over by contractor to the client*. This appears to have been achieved on all four case studies. The importance of being 'defect-free' has lost its significance for the client as the very nature of PFI requires the SPV to be responsible for operational quality for a long time span. Furthermore, the payment mechanisms provide for a deduction to be made if the services fail to meet quality standards.

A further case study (the A92 road project) has also been quantitatively analysed. This indicates that the elimination of obstacles and the support of the stimulants at early conception stage has yielded a 12-15% reduction in capital cost of construction (with no impairment of whole-life cycle operational costs) and an 8-10% reduction in construction time scales, leading to earlier delivery of the project and an increased period during which service charges can be claimed (which, in financial gain to the SPV, is approximately equivalent to a further 6-8% increase in expected revenues from the project).

At the external level, interventions suggested by professional bodies and clients have influenced the PFI case studies as follows:

- *A culture where people are open-minded, willing to accept change, flexible, and free from dogma*. The case studies have failed to demonstrate this. HMPS rejected an innovative design solution and insisted on reverting to a tried and tested prison layout. The Tagus Bridge had a client body that changed during the project inception and sought to introduce changes to the project agreement. This resulted in a 'traditional' adversarial style of management that led to the need for the global financial settlement to restore parity to the financial model for the scheme. The JSCSC project had a very effective client team. It was so effective that it overpowered the construction sub-contractor which resulted in disastrous consequences for the construction sub-contractor team. The Victoria Dock Primary School project demonstrates a successful achievement of this intervention strategy
- *Flexibility in the lines of communication and structures that allow top-down, bottom-up and lateral communication within the organisation*. The case studies identified no improvement over the level expected within traditional forms of procurement.
  The JSCSC case study indicated that the flexible lines of communication hampered the delivery of the project. Too much informal communication bypassed the formal structures and resulted in some project failures. However, the Victoria Dock Primary School appeared to have worked effectively with the informal communication structures that existed
- *A risk-tolerant climate where it is accepted that lessons can be learned through mistakes*. There is no indication in three of the case studies that a risk tolerant climate existed. There is some evidence from the Tagus Bridge that creative problem solving was being encouraged and this was demonstrated in some of the technical changes that were incorporated in the final project solution
- *A 'knowledge-friendly culture' where people are not inhibited about sharing knowledge and do not fear that sharing knowledge could cost them 'power and influence' or even their jobs*. The JSCSC had a novel approach to knowledge sharing and design approvals. It was extremely effective, but may have contributed to the creation of further obstacles that hampered the project delivery. It was criticised for being inflexible and very slow
- *An 'iterative-learning' culture where the lessons learnt on one project are freely available for everyone to assimilate*. There is little evidence that iterative learning is freely available. Unfortunately most of the project experiences are implicit to the individual and there was no structured mechanism for converting implicit knowledge held by individuals into explicit knowledge available to everyone. This also links to a previous point relating to risk tolerance. Individuals are culturally biased from publicising personal mistakes. Mistakes that could be avoided on future projects are not adequately reported. A further point to note is that the risk registers and risk reports are considered to be extremely commercially sensitive. It appears that organisations consider the risk register as a source of competitive advantage for future PFI schemes.

PFI is developing world-wide as a procurement mechanism. The elimination of unintentional constraints upon innovation within the PFI project and the inclusion of stimulants can improve project quality, reduce costs and improve delivery times by minimising the risks associated with this form of procurement.

The detailed analysis of these case studies has resulted in the development of a series of recommendations that are presented in the concluding section of this report.

The emergent role of the quantity surveyor in PFI

chapter five

The overall end purpose of any procurement strategy is to select an arrangement that is fit for purpose and satisfies the client's needs by meeting the main procurement parameters, ie time, cost, quality and certainty. Clients procure construction services from constructors and traditionally such forms of procurement have been realised through different procurement paths:

- Profession–led design procurement path (traditional)
- Constructor–led procurement path (design and build)
- Management forms of procurement
- PFI / PPP forms of procurement.

Within each of the first three forms of procurement the quantity surveyor (QS) has evolved over time and emerged to provide developments of the traditional and historical QS function that meets changing demands. PFI is merely an additional form of procurement. It is now therefore the responsibility of the QS to provide services that respond to the needs of this evolving form of procurement.

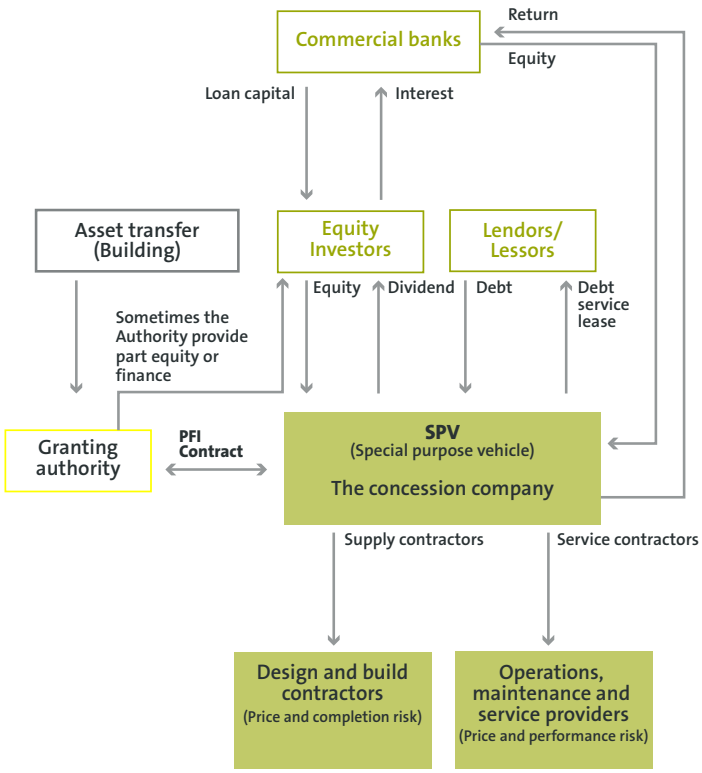
A typical PFI structure is shown in figure 5.1. The only noticeable difference from the previous well known forms is the increasing complexity of the arrangement of participants, combining as it does elements of traditional, design and build, and management forms of procurement. The PFI form of procurement therefore requires the provision of typical QS services. The additional advantage of the PFI format is threefold:

- Typical QS services are now required by more separate parties
- Further higher value added services are now required
- QS services are now needed for a longer duration.

These QS services are required by the public sponsor, the SPV, the design and construction companies, the operation and maintenance companies, and by the various financial institutions providing equity, commercial loans and debt finance.

Figure 5.1: Basic structure for a PFI/DBFO project in the UK

Source: Akbiyikli & Eaton, 2004



The key elements of PFI QS services

Figure 5.2 represents the potential for value added services that are now required in the execution of a PFI project. It is not intended to define the service but to identify the potential areas within which QS Services can be developed and to highlight the crucial role of the QS in ensuring value for money and delivery of the project on time.

Figure 5.2: Value added QS services

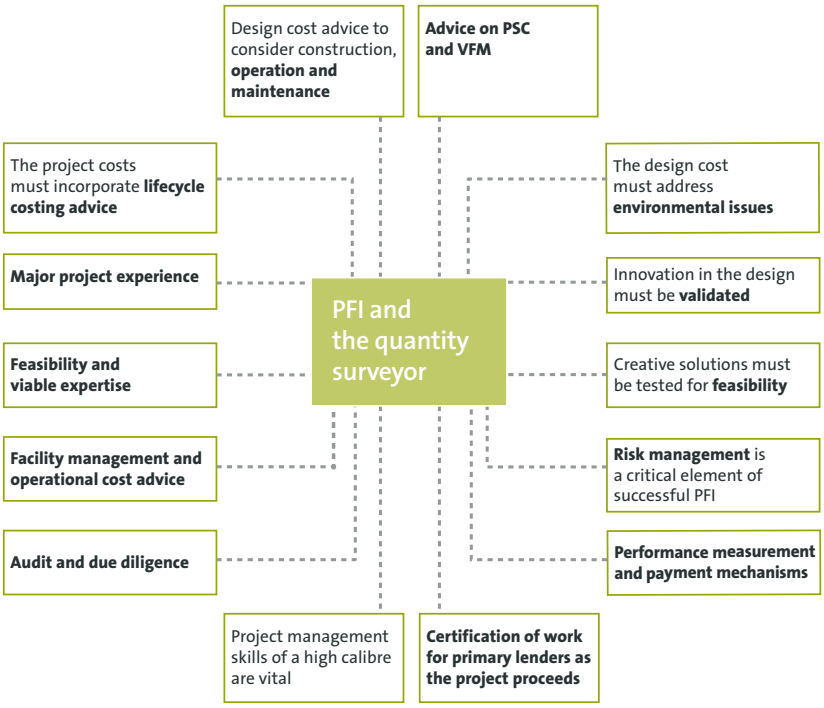


Figure 5.3 represents the extended timescale over which QS services are now required.

Fig.5.3: Timescale showing where QS services are required

The conception stage

- Where an idea has been initiated.

The feasibility stage

- This stage will appraise the option, assessing realistic alternatives for achieving the business need. Establishing whether the project is viable to proceed.

Business plan

- A business case needs to be prepared to establish whether the project is affordable under PFI.

Testing value for money

- At this stage the bid is put out to competitive tender through the OJEC. The PFI scheme is compared with the PSC to establish whether this route is value for money.

Award of contract

- After the pre-qualification of bids, short listing and negotiations, the contract is awarded to the preferred concessionaire and a contract award notice is cited within the OJEC.

Construction

- The construction phase is completed by the private sector consortium, which has accommodated the majority of the risk associated with the project.

Operation and maintenance

- After the construction phase the consortium is responsible for maintaining the scheme to a specified standard and over a stipulated period of time (25-30 years).

Selling on/transfer

- After the contract has terminated, the project will be returned back to government in a suitable standard specified within the contract. The government is in a position to gain the economic benefits from the remainder of the economic life.

Office of Government Commerce Private Finance Unit, 1999

Illustrating the main opportunities for QS services in PFI

Figure 5.4 illustrates the QS service opportunities and the types of provision that may be provided for the different parties.

Fig.5.4: QS opportunities for different parties within the PFI project

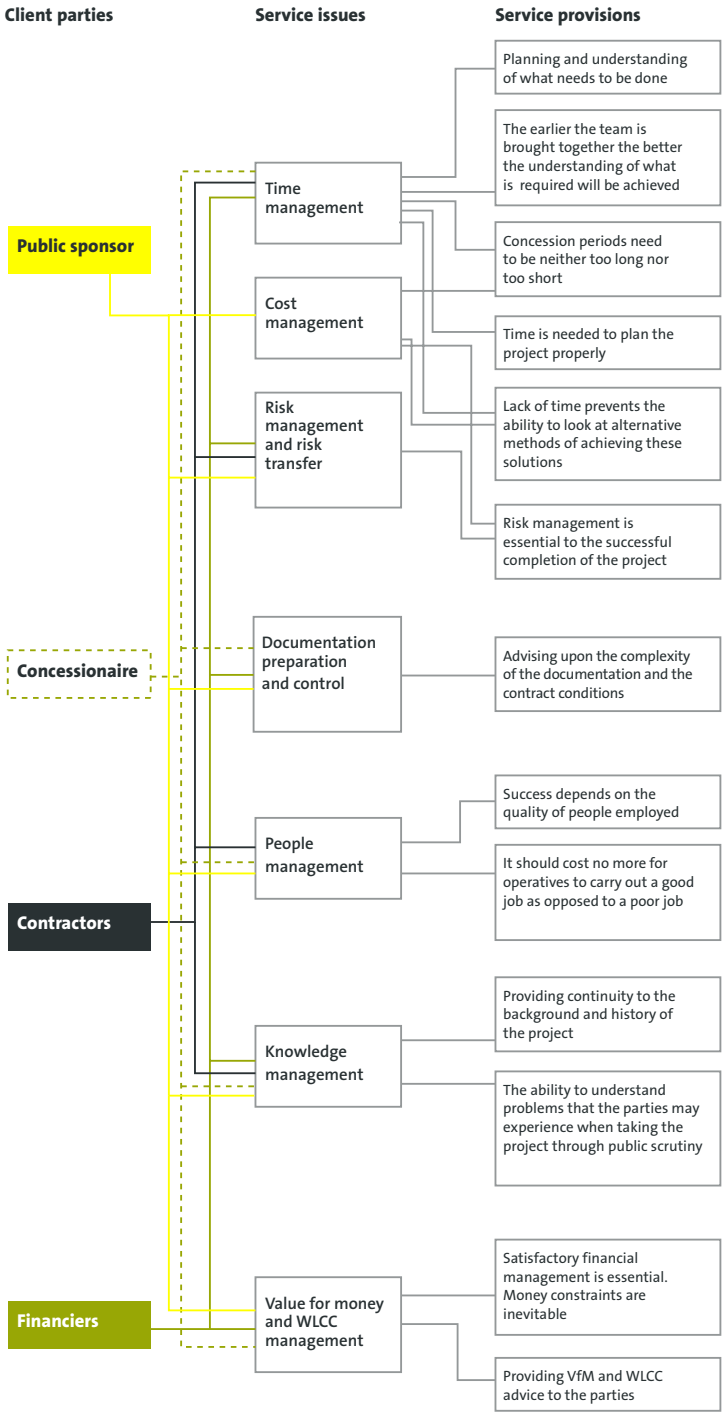
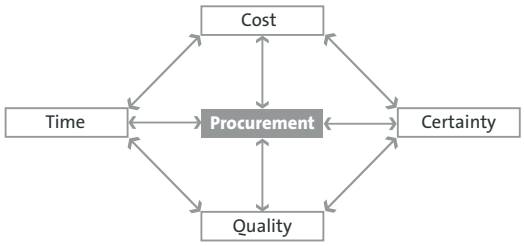


Fig.5.5: The co-dependent functional procurement parameters of PFI



In Figure 5.5 each of the traditional time, cost, quality parameters of other forms of procurement are merged with the certainty parameter. Historically the time, cost, quality triangle was considered to be a trade-off, ie higher cost and higher quality necessitates more time. PFI has taken the control of the original parameters to a higher level. Within PFI, achieving a high level of certainty in the control of time, cost and quality is now an essential pre-requisite to achieving financiers support for the borrowing requirements.

'Bankability', ie satisfying the prospective primary lenders, requires that cost, time and quality now have a greater degree of up-front guarantee of delivery before the lenders will agree to the borrowing regime for the project. Achieving high levels of 'bankability' can improve the loan terms and quantum of the borrowing. These loan terms will inevitably alter the financial viability of the project but could cause the project to fail its initial financial viability test. In such cases alternative funding may be required to supplement the financiers lending. This could mean increasing the initial concessionaire cash investment in a project. This is typically of the order of 10%. In the Tagus Bridge project a €320 million EU Cohesion Fund and a €160 million government grant was required before the project could achieve sufficient 'bankability' to become economically viable. In the Victoria Dock Primary School project, the concessionaire increased his initial cash investment to 25% of the project cost and the public sponsor contributed a non-reimbursable grant of £0.2 million to raise the level of 'bankability'.

In both cases the provision of QS-type services was required to assess the level of 'bankability' achieved in the projects. Individual QSs and cost consultants were appointed for the public sponsor, the concessionaire and the primary financiers before the project achieved financial closure, ie the point when all parties agree that the project is capable of delivery.

Figures 5.6 to 5.9 provide a more detailed examination of each of the four co-dependent parameters. For example, in figure 5.6 the sub-parameters of time for design and time for construction indicate time issues that have assisted in achieving the time certainty within PFI. The A55 road project achieved delivery before the programmed completion date. This was achieved by ensuring that during the development of the production programme the construction schedule provided adequate time for the design to be developed and for the incorporation of client change orders without disrupting the construction schedule.

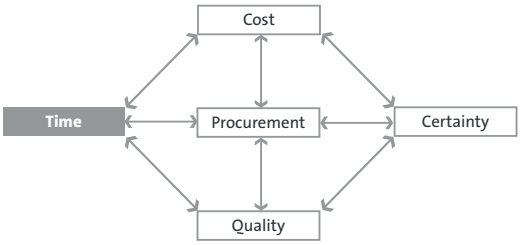
On the A92 road project the capital construction cost of the project was reduced by attention to the cost dependency sub-parameter of tax implications, as indicated in figure 5.7. The constructor avoided significant payments of aggregate tax and land fill tax by incorporating recycled sub-base road improvement fill obtained by demolishing an abandoned runway adjacent to the site. This recycled material was used on the road and surplus excavated material was used to reinstate the void created by the demolition.

On the NSDR road project the whole life cycle cost of the project was based upon the expectation that the attention to quality performance characteristics of the road surface, as illustrated by figure 5.8, would mean that no unexpected road closures would be necessary during the first ten years of operational life.

Figure 5.9 illustrates the sub-dependency variable associated with achieving improved certainty within the PFI projects. Careful attention to risk and risk transfer has been addressed within all of the previous case studies. Complexity and change have also been identified within the case studies. On the JSCSC project the change order and approval scheme has been identified as being a major problem. An alternative approval scheme could have prevented some of the cost uncertainty associated with that project.

These figures (5.6-5.9) act as prompts or checklists of issues to be addressed in developing the project plan for an individual project. They are not exhaustive, but they do serve to provide prompts that can be used to identify issues to be addressed within the project development cycle. They can also be used to assist in identifying risk items that should be considered in implementing a project proposal.

Fig.5.6: Time dependency parameters



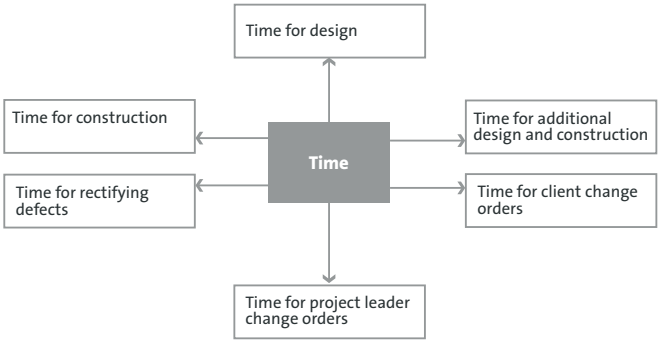
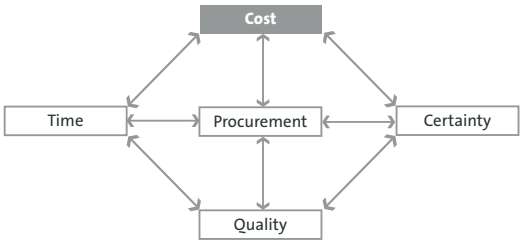


Fig.5.7: Cost dependency parameters



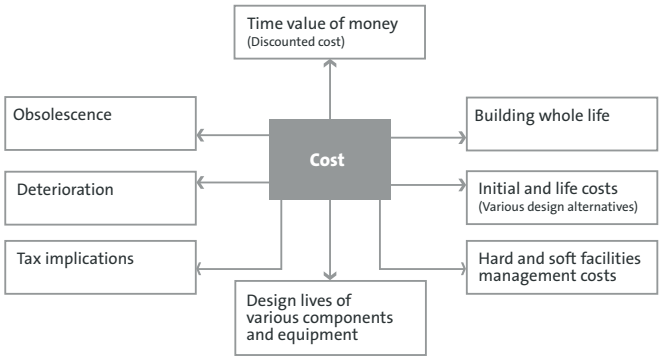
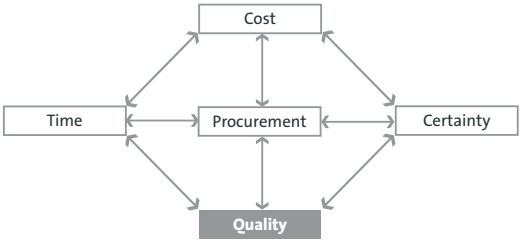


Fig.5.8: Quality dependency parameters



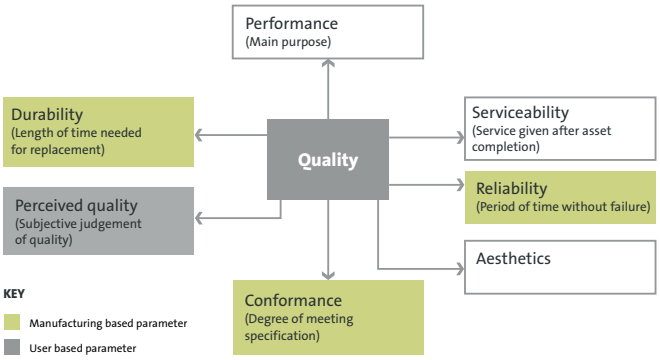
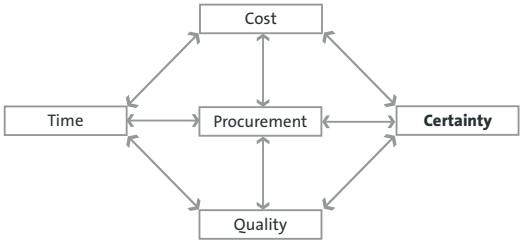


Fig.5.9: Certainty dependency parameters



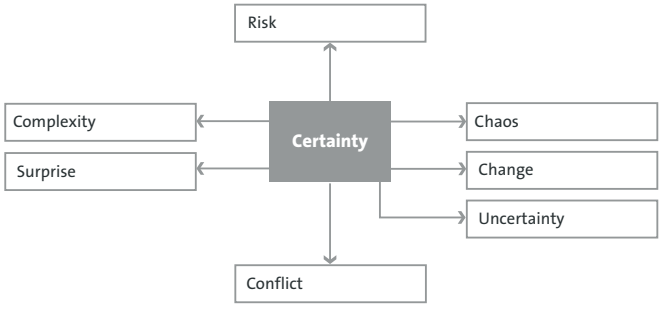


Fig.5.10: Typical risk management matrix for PFI

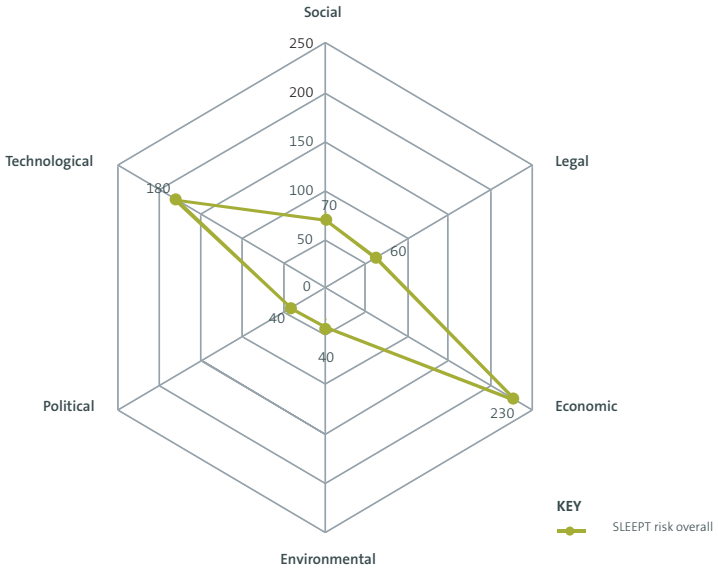


Figure 5.10 represents an analysis of the proportionality of risks identified on a typical PFI project. Assuming that a score of 250 represents a comprehensive risk evaluation of a social, legal, economic, environmental, political, technological (SLEEPT) risk category then it can be seen that a complete risk management matrix would follow the circumference of the hexagon. Each risk category would have a score of 250 points.

Typically, there are imperfections in the risk analysis such as 20 points of economic risk are unregistered. However, a typical political risk category can have as many as 210 points of unregistered risk. Other risk categories follow a similar pattern.

Summary

The QS is well placed to develop and provide refined risk management tools and services to move the typical risk profile towards the optimum. The QS can develop and provide services to all parties associated with PFI projects. This will involve providing risk management, whole life cycle cost advice, value for money feasibility and viability advice as well as due diligence advice and the more traditional cost advice services for which the QS profession is well renowned. PFI projects offer the opportunity; it is now the responsibility of the QS to provide these services.

Conclusions

chapter six

PFI and PPP have a 'political' genesis. Whenever governments have needed investment and felt unable to finance such investment through taxation they have sought private investment to supplement public expenditure (for instance, the development of the entire canal system in the UK is a good example of early PFI). The reinvention in the late 1980s and the consequent politicisation of an age-old procurement approach has meant that much published material about the effectiveness and efficiency of PFI is driven by a political doctrine.

This report has attempted to remove the political dogma and present a balanced and reasoned argument of the benefits and costs of the PFI approach. Removing political dogma does not, however, mean avoidance of political issues. The context of the re-introduction of PFI after the lapse of nearly 200 years relates to the major structural and political changes. The accession of the UK to the EU and the agreement to the Maastricht Treaty criteria created an unprecedented economic and political pressure to reduce drastically public sector spending in the UK. At the same time, other European legislation and changing social mores led to equally unprecedented social, environmental and legal pressure to improve the infrastructure and social provisions within the UK.

SLEEPT pressures created competing and occasionally mutually exclusive objectives for the public and private sectors. This has been highlighted by much of the media coverage of PFI initiatives. However, the political and technological imperatives overcame these resistances and a period of dramatic change emerged. Government (both central and local) was no longer the exclusive provider of public services as it became a purchaser of contracts for service. The private sector has also changed from providing built assets to being utilised by the public sector. This has involved the private sector being paid for the construction of the assets and becoming providers of services, paid for the quality and quantity of service provided.

With political encouragement, the UK private sector is now investing in the improvement and upgrading of 'traditional' public sector services. In 2005 it is anticipated that PFI expenditure will approach 40% of the fixed capital investment of the UK. This will be matched by a further 40% of capital expenditure by government (both central and local) utilising more traditional forms of procurement. There is no fundamental economic reason to reject the PFI approach, but it must be economically justified.

The three road project case studies (the A55, A92 and Newport Southern Distributor Road) and the Victoria Dock Primary School are examples of an extreme form of economic justification. It has been acknowledged by members of these projects' sponsors that the PFI approach was the only game in town. Furthermore, they concluded that:

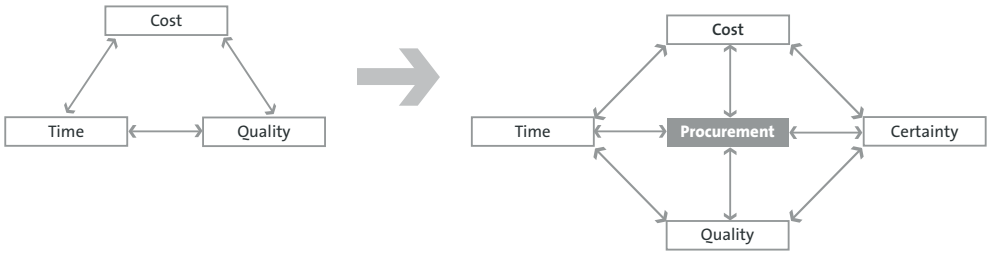
- There was no alternative approach that had any foreseeable chance of being executed
- All of these local authorities had competing demands for the available finance
- Despite the economic and social necessity of such projects, there were always going to be other projects with even greater needs.

The Tagus River Crossing in Lisbon, Portugal had the same economic and social needs as well as a central government with little realistic chance of securing full finance for such a major project. The JSCSC and HMPs Altcourse and Parc are subtly different. In these cases there was an alternative financing mechanism available for the Ministry of Defence and HMPS. In these cases an economic evaluation was conducted and concluded that PFI would provide a more efficient utilisation of the available financial resources.

These projects demonstrate a form of purchase that is common to some British households. PFI is a form of hire-purchase, paying by instalments until such time as the capital value plus financial charges has been recouped by the provider. It is accepted that the quantum involved is large but in annual percentage terms it is no larger than an individual accepts when hire purchasing a new car.

The critical success factors (CSFs) that have emerged from the case studies are not new. Figure 6.1 demonstrates that the old time/cost/quality triangle has now changed to a rhomboid and become time/cost/quality/certainty.

Figure 6.1: Time, cost, quality and certainty



The iterative and co-dependent nature of the time/ cost/ quality functions now have an additional co-dependent function of certainty. Sponsors now want certainty in:

- Time of delivery
- Projected cost of construction
- Projected cost of operation
- Projected cost of maintenance
- Quality of the product
- Quality of the process
- Projected useful lifetime of the complete project
- Projected useful life of the components associated with the particular PFI project.

Previously the contractor was concerned with providing adequate quality within time and cost requirements only until at most one year after practical completion. This continued until the expiration of the defects liability period. Then the contractor was effectively 'off the hook' and the quality of the provision and its associated cost became the absolute responsibility of the client. Now, however, the SPV and its facilities management provider are concerned about quality and cost throughout a 20 to 30 year time period and in certain cases are required to give a cast-iron 'fit-for-use' guarantee for a further ten years upon reversion to the project sponsor after the expiration of the concession period. Thus the time scale of the significance of these co-dependencies has increased by a significant factor of between 10 and 20 times.

What is now required is the development and securing of QS services to ensure that all of these requirements are being fully met and, if they are being fully met, that they are met on each and every project for the entire life-cycle.

A further issue that has emerged from the evaluation of the case studies is the emergence of differentiated risk profiles, differentiated by the class of party to the project and also by the prioritisation of the features for the specific PFI project. Five generic groups of parties that have the potential to utilise QS services within a PFI project have been identified:

- Public sponsor
- Concessionaire (SPV)
- Lenders
- Constructors
- Operators.

There are also four generic features of PFI that can be identified within each PFI project:

- The risk transfer approach
- The robustness of the project arrangements
- The value for money achieved within the project
- The overall affordability of the project scheme.

This creates potentially competing objectives that need to be managed to deliver a successful project.

The risk transfer approach refers to the balance achieved within the agreements between all of the parties in relation to accepting the financial consequences should a risk occur on a particular PFI project. As an illustration, Best Practice Guidance confirms that a risk should be allocated to the party best able to manage and control the risk. In the prison case studies a complete round of tendering was rendered invalid because the public sponsor had attempted to transfer the occupancy risks to the concessionaire, when it was patently obvious that the public sponsor, HMPS, was the only party that could manage the risk associated with the number of prisoners sent to a PFI prison. In the JSCSC project the risk associated with cost escalation following design development was transferred from the public sponsor, who was in control of the design development, via the SPV to the contractor who was responsible for constructing the buildings. This risk was so severe that it significantly contributed to the demise of the construction company. In hindsight this risk should not have been accepted with the level of design completion that had been achieved at the time of the provision of the GMP.

The robustness of the project arrangements refers to the concurrence of the individual aims of the individual parties with the main project objectives. The project arrangements should be equitable for all parties, ensuring that all parties have the ability to complete a particular project without the necessity for 'step-in' and so that no party perceives the agreement as unfair. A satisfactory robustness arrangement would be one that all parties would be prepared to execute for subsequent projects. HMPS identified this as a major risk when it publicly stated that it had foregone significant initial savings on the first two projects in order to create a long term competitive market in PFI prison provision.

A further question relating to the robustness of PFI project arrangements is the level of up-front risk capital necessary to develop a PFI project. It is accepted that the 'at risk' capital needed for a PFI development has increased from that required for other more traditional forms of procurement. However, this is reflected in the level of profitability sought within the PFI repayment model to demonstrate the bankability of the project. The Victoria Dock Primary School project demonstrated that this increase in 'at risk' capital can pay dividends. It has, however, been recognised that the costs of preparing unsuccessful bids could be an impediment to free market entry.

The project case studies have identified that an important stimulant to successful development of PFI is the previous expertise within a market sector that the prospective bidder can draw upon when developing the proposal.

The VFM criteria relates primarily to the public sponsor who frequently has a statutory duty to demonstrate that their expenditure is being managed effectively and efficiently. This is typically done by reference to the PSC. It should be noted that in the Victoria Dock Primary School project, the cost exceeded the PSC. Independent consultants declared that this was a bad PFI project. Other intangible benefits that are not currently permitted to be included within the PSC meant that, in the view of the project participants and perhaps more importantly the local residents, they all believe that the project has been really successful. It should also be remembered that the private parties within a PFI project all have a requirement to conduct profitable business and so will have their own VFM evaluation requirements. PFI projects are supposed to generate 'win-win' opportunities rather than the more orthodox 'win-lose' situations. The JSCSC demonstrates a project where this did not occur. There is evidence from within the case studies and from subsequent NAO evaluations that most PFI projects in the construction and property sectors are providing value for money. The PFI prison case studies show a trend of improving VFM for the public sector.

There is also evidence from within the case studies that PFI projects are providing better quality provision than other more typical forms of procurement. This is also endorsed by further NAO analysis. The increasing emphasis on WLCC to support decision making on issues of quality appears at this early stage in most PFIs to be successfully implemented by the providers. There will be no definitive evidence until after the expiration of the concession period and then it will only be verifiable if the SPV releases the operational cost data.

The overall affordability of the project relates to the ability of all parties to complete the project with the available resources. The public sponsor has to ensure that it has access to funds and that the expenditure of the available funds provides an adequate return when compared with other alternative investments. The private parties need to ensure that they have access to sufficient finance and other resources to complete the project and obtain an income from the operation of the facility over the concession period. All of the case studies contained in this report have been completed and become operational. This is not necessarily guaranteed. The combination and balance between risk transfer, robustness, VFM and affordability therefore needs to be considered holistically.

Figure 6.2 takes a sample register from a PFI project and, through simple discriminant analysis, identifies and allocates the risk to those parties significantly affected by the occurrence of a particular risk. The asterisk indicates that the identified risk will have a significant impact on the risk neutral position of the relevant party. It should be noted that risks can impact on more than a single party - some risks can impact on all parties.

Figure 6.2: Discriminant analysis for parties of a simple risk register

Risk category	Public sponsor	SPV	Lenders	Contractors
Social:				
Protester action		*		*
Public utilities				*
Traffic management				*
Road safety audit		*		
Interested parties	*	*		*
Vandalism		*		*
Legal:				
Environmental studies requirements	*	*		
Planning amendments – compliance	*	*		
Planning amendments – variance		*		*
Relevant authorities	*	*	*	*
Design standard changes		*		*
General legal changes	*	*	*	*
Economic:				
Delays to progress/completion		*	*	*
Adverse weather				*
Contractor insolvency		*	*	*
Inflation variance		*	*	*
Scheme cost increases		*		*
Inflation risk		*		*
Quantity variance		*		*
Design variance	*	*		*
Employers requirement changes	*			
Contractor solution changes		*		*
Interest rate risk (post close)		*		*
Vat status risk	*	*		
Availability risk		*	*	
Usage risk	*	*	*	
Performance risk		*		*
Abnormal staff costs		*		*
Inadequate s/c performance		*		*
Force majeure	*	*	*	*
Determination – contractor default		*	*	
Determination – sponsor default		*	*	*
Determination – other	*	*	*	*
Environmental:				
Environmental pollution		*		*
Archaeology	*	*		*
Noise		*		*
Pest damage		*		*
Political:				
Interest rate change		*	*	*
Employers changes	*			
Change of government	*	*	*	*
Change of PFI policy	*	*	*	
Technological:				
Limited site area				*
Works accommodation				*
Soft ground				*
Hard ground				*
Ground water				*
Mine workings				*
Rock quality and presence				*
Unforeseen defects		*		*
Accident damage		*		
Wear and tear		*		
Renewal and replacement – planned		*		
Renewal and replacement – unplanned		*		
Utilities access		*		*
Repair and maintenance		*		
Construction failure		*		*
Snagging		*		*

Figure 6.3 utilises the same discriminant analysis for the risk transfer, robustness, VFM and affordability criteria. It should be noted that some risks may only affect one aspect, whilst others may affect all four of the criteria.

Figure 6.3: Discriminant analysis for key risk differentiated criteria

Risk category	Value for money	Robustness	Affordability	Risk Transfer
Social:				
Protester action	*	*	*	*
Public utilities		*		*
Traffic management	*	*		
Road safety audit	*			*
Interested parties	*	*	*	*
Vandalism	*	*	*	*
Legal:				
Environmental studies requirements		*	*	*
Planning amendments – compliance		*	*	*
Planning amendments – variance			*	*
Relevant authorities		*	*	*
Design standard changes	*	*	*	*
General legal changes	*	*	*	*
Economic:				
Delays to progress/completion		*		*
Adverse weather		*	*	
Contractor insolvency				*
Inflation variance	*	*	*	
Scheme cost increases	*	*	*	
Inflation risk	*	*	*	*
Quantity variance		*	*	*
Design variance	*			*
Employers requirement changes	*	*	*	*
Contractor solution changes	*	*	*	
Interest rate risk (post close)	*	*	*	*
Vat status risk	*	*	*	
Availability risk	*	*	*	*
Usage risk	*	*	*	*
Performance risk	*	*	*	*
Abnormal staff costs		*	*	
Inadequate s/c performance		*	*	*
Force majeure	*	*	*	*
Determination – contractor default	*	*	*	*
Determination – sponsor default		*	*	*
Determination – other	*	*	*	*
Environmental:				
Environmental pollution		*	*	*
Archaeology		*	*	*
Noise		*	*	*
Pest damage		*	*	*
Political:				
Interest rate change	*	*	*	*
Employers changes	*	*	*	*
Change of government	*	*	*	*
Change of PFI policy		*	*	
Technological:				
Limited site area		*	*	
Works accommodation		*	*	
Soft ground		*	*	
Hard ground		*	*	
Ground water		*	*	
Mine workings		*	*	*
Rock quality and presence		*	*	
Unforeseen defects	*	*	*	*
Accident damage	*	*	*	
Wear and tear	*	*	*	
Renewal and replacement-planned	*	*	*	
Renewal and replacement-unplanned	*	*	*	
Utilities access		*	*	
Repair and maintenance	*	*	*	
Construction failure	*	*	*	*
Snagging	*	*	*	*

We have seen within the case studies, examples of inappropriate risk transfer. In two cases the risk transfer was rejected by the bidders (prisons) whilst in another (JSCSC) the risk was accepted without adequate contingency or risk premium. We have also seen that the SPV is now involved from a much earlier phase in the project development cycle and this has been accompanied by an increase in the time scales of the pre-construction phases.

There is no suggestion within the case studies that this increase in timescales is not important to the successful implementation of the project, however there are signs that some of the increase is associated with a lack of familiarity with the PFI philosophy and its associated procedures. This increase in timescale has led to an increase in the cost of bid preparation for projects. Within the case studies certain private sector parties have criticised the project sponsor for overly bureaucratic procedures. However, sponsors have shown significant improvements as projects progress and repeat sponsors have shown significant improvements from their novice position. It is believed that this is a function of the newness of the process and this can cease to be a major issue.

There is some evidence from within the case studies that the increase in pre-commencement on site time is offset by reduced construction durations. The significance here is that all the time saved during construction reaps a financial dividend for the SPV in having a longer operational period during the concession. For instance, one of the road projects finished earlier than anticipated and contributed an additional £0.25 million in revenues from shadow toll payments.

In such a short paper it is impossible to scrutinise all aspects of the PFI approach. However, the conclusion to be drawn is that PFI is an effective procurement route that has grown considerably in use in recent years and will become increasingly important to an even wider group of services within the public sector in the near future. Indeed it is expected that PFI will continue to grow overall as a proportion of all construction activity.

It is now the responsibility of the entire construction and property professions to ensure that PFI is applied appropriately. Only when it is applied in this manner will PFI provide value for money for the contracting partners. To this end, the role of the QS will be pivotal to ensuring that PFI delivers the potential benefits without permitting the potential abuses that could occur. The following chapter outlines how to ensure this happens and that PFI reaches its full potential for all parties involved.

chapter seven

For government

Attain global leadership in PFI development activity: the UK should position itself as the natural leader in the development of international and national PFI practice. This should also include the UK seeking representation on the United Nations Economic Commission for Europe – Build, Operate, Transfer (BOT) Expert Group.

Recognised international PFI practitioner qualification: there is scope within the UK to demonstrate international leadership in determining the direction of PFI practice development by developing an internationally recognised PFI practitioner qualification.

Create and manage a standard form of PFI cost report: with the growth of PFI procurement, the UK Government should provide the strategic direction in the provision of detailed PFI project cost reporting provision. While the Building Cost Information Service (BCIS) cost report provides useful information on the basic construction costs, the PFI practitioner now needs cost information combining capital cost, cost in use, facilities management, operational costs, etc. that exceed those currently provided. This PFI cost report would be invaluable for all stakeholders in determining the value for money, risk transfer policy and premiums, affordability and robustness criteria and premiums of current and future PFI projects. The PFI cost report would also provide information on the payment mechanism incorporated into the financial model. It could also provide an indication of the creativity and innovation achieved by the project and/or incorporated in innovation premiums within the project. The report could also provide a 'key messages' section providing feedback on major issues arising within the project, including the identification of novel risks incurred within the project and a commentary on how they were dealt with and their impact.

Create and manage a standard form of whole life cycle costing (WLCC) reports: associated with the need for a PFI cost report is the necessity of WLCC feedback. This should become an extended form of the Building Maintenance Cost Information Service (BMCIS), to provide detailed feedback on 'hard' and 'soft' facilities management costs associated with the long term operational features of PFI concession periods. A 'key messages' section as previously described would benefit all PFI stakeholders.

Risk management – education and training: a critical feature of successful PFI projects is effective and efficient risk management. There should be development of and/or support for the provision of courses that would increase the dissemination of risk management and improve the quality of risk management provision available to the construction and property industry. A basic provision of risk management tools and techniques should appear in appropriate undergraduate degree programmes and advanced education and training in postgraduate programmes.

Risk transfer guidance – effective allocation and evaluation for each party: a basic tenet of PFI is the transfer of identified risks to the party best able to manage the risk should it occur. However, there is evidence that such principled risk transfer is not currently the accepted norm. Guidance should be provided to all stakeholders on 'what' 'why' and 'how' equitable risk transfer should be achieved within PFI projects.

Risk management tools – effective dissemination of available tools: risk management tools should be developed and disseminated in order to improve the quality of risk management within the property and construction industries.

Whole life cycle costing – education and training: a critical feature of successful PFI projects is the effective and efficient use of WLCC techniques. There should be development of and/or support for the provision of courses that would increase the dissemination of WLCC and improve the quality of WLCC management provision available to the construction and property industry. A basic provision should appear in appropriate undergraduate degree programmes and advanced education and training in postgraduate programmes.

Recognition and inclusion of value for money criteria relating to risk transfer: especially social, environmental, political and regulatory issues. The current structure of the Public Sector Comparator (PSC) is highly restricted in the economic features that can be permitted to be incorporated. Governments should permit the evaluation and inclusion of benefits and 'benefits in kind' created by the risk transfer approach adopted within particular PFI proposals.

Recognition of the risk management benefits and the inclusion of a risk premium: the private sector has an entrepreneurial reason for accepting PFI projects. A part of this entrepreneurial relationship is the acceptance of risks that have historically always been carried out by the public sector. If the private sector evaluates this risk and proposes a risk 'premium' to cover the accepted risks, then this risk premium should be permitted as an addition to the PSC, to allow equitable evaluation of alternative procurement approaches.

Recognition of 'robustness' issues of PFI procurement: the PFI approach is most effective when an honest, open and trustworthy (HOT) approach to project partnering is accepted. This approach requires the attainment of congruent aims and objectives – in such cases a 'robustness' premium may be required to align the aims and objectives and should be a permitted addition to the PSC for equitable evaluation.

Recognition of 'affordability' issues of PFI procurement: the long term sustainability of the PFI niche market for transport, defence, education and environmental projects will require niche specific expertise. In the short term, the acceptance of bids that create PFI competition, when not necessarily the lowest effective bid, should be permitted if it can be demonstrated that such a bid will enhance and develop the niche expertise. This will prevent the creation of niche-specific near monopoly suppliers.

Permit changes to the Public Sector Comparator calculation recognising creativity and innovation issues: the PSC should permit the incorporation of a creativity and innovation premium developed through the project to encourage the entire PFI project team to implement alternative project solutions. Most of the project case studies have had creativity inhibited by the reluctance of the project sponsor to incorporate 'new ideas' into the project. Such a premium would recognise the imperative of developing new approaches for the benefit of the whole of the UK economy.

Permit changes in the Public Sector Comparator in recognition and inclusion of the taxation and environmental emissions implications of WLCC: the incorporation of WLCC can have an impact on the initial cost of the project, which is subsequently reflected in operational savings. These operational savings can often be significant. This future benefit should be permitted as an allowance in the PSC for equitable evaluation with alternative forms of procurement.

Recognition and inclusion of the cost benefit analysis 'additionality' afforded by PFI: for example, the benefit of local involvement through employment on the project. An 'additionality' premium should be permitted for exceptional benefits accruing to a particular project.

Payments for a proportion of unsuccessful or abortive tendering costs for short-listed bidders on OGC, Partnership UK or other government-approved projects: the risk capital involved in preparing a PFI proposal is demonstrably higher than other forms of procurement. It also takes far longer to complete a PFI bid than other forms of bids. These both have an effect on restricting the competition to only those companies that are able to afford the initial investment. There is some anecdotal evidence that unsuccessful bidders have made a strategic retrenchment, and will not contemplate future PFI bids. This issue will impact in the long term on the VFM, robustness and affordability issues raised previously. The inclusion of a payment for a proportion of the costs of unsuccessful bids would encourage new market entrants and previously unsuccessful bidders to continue to bid for subsequent projects.

Government encouragement and 'seed-corn' fund for SME PFI projects: the ability of an SME to contemplate involvement in developing a PFI project is severely restricted by the proposal costs. The financial support for a proportion of the bid costs and the availability of SME support funding could significantly enhance the ability of an SME to promote 'smaller' PFI projects. This will also involve the creation of shortened PFI documentation for smaller scale PFI projects.

Government support/approval for the development of alternative concession mechanisms as alternative to fixed duration concessions: a time limited concession appears to be the standard approach to developing a concession arrangement. Alternative limits, such as traffic volumes, number of fee paying entrants, etc should be examined and encouraged when appropriate. The alternative concession mechanisms could also assist in resolving 'unbankable' risk transfer issues.

Issue guidance on degree of disclosure: governments should issue advice and guidance on the extent of disclosure required of project sponsors to achieve legal genuineness of agreement between the sponsors and the SPV. Non-disclosure or only partial disclosure could create the grounds for a legal challenge based upon misrepresentation if the SPV finds itself in financial difficulties caused by a lack of information from the sponsor. The Vasco de Gama bridge project (case study 3) was put in this position by a failure to disclose changes to contractual agreements with government contractors that became subsumed within the bridge project agreement. In this case the Portuguese Government conceded its failings and a substantial cash settlement was agreed as a part of the global re-settlement of the financial model for the operational phase of the project. This issue has not yet been tested in the UK courts. Such guidance could help to avoid this issue in the future.

For the private sector

Adequate and appropriate PFI/PPP expertise availability: prospective project sponsors should ensure that they only embark upon the PFI process if they have ensured adequate and appropriate expertise is available. This may mean the appointment of external advisors. However, without the correct expertise available, the creation of an effective and efficient project proposal will be significantly hampered. Expertise is required to ascertain value for money for the project sponsor at all stages of the project, from conception through to selling on/transfer. Expertise is required in time management, cost management, risk management, documentation and contract management, people management, knowledge management and WLCC management. There were indications within the Vasco de Gama Bridge project that the lack of adequate expertise on the part of the project sponsor and its government advisors led to ineffective project preparation and the consequent additional global settlements to the agreed financial model.

Guaranteed maximum price education and training: a novel development within PFI has been the willingness of constructors, operating as sub-contractors to the SPV, to provide a GMP for the capital construction costs of the project. The consequences of offering and accepting a GMP must be recognised by the project sponsor. The risks, although directly incurred by the SPV, tend to have a 'knock-on' effect for the sponsor. These 'knock-on' risks associated with an inappropriate GMP are similar to accepting a traditional tender which is determined to be unrealistically low. The certainty of time, cost and quality are all hampered. The JSCSC project incorporated a GMP that proved to be impossible to achieve. In this instance the project was delivered to time and quality but the cost implications led to the subsequent demise of the construction sub-contractor. However, if the demise had occurred during construction the outcome could have been very different.

The consequences of requesting and then accepting a GMP must be recognised by the SPV. The risks are directly incurred by the SPV. These risks associated with an inappropriate GMP are similar to accepting a traditional tender which is determined to be unrealistically low. The certainty of time, cost and quality are all hampered. This is particularly pertinent when the construction sub-contractor tends to be an operational division of the same company conglomerate as a partner in the SPV.

Risk and value for money training: it is essential that both the SPV and the project sponsor have adequate expertise in risk management and VFM. Decisions relating to these issues have an extraordinary impact on the whole PFI project. An unequal access to the relevant expertise could also hamper the project. As indicated in the Vasco de Gama Bridge project, the unequal expertise created a major handicap for the project sponsor. The JSCSC project had unequal expertise favouring the project sponsor and this led to the SPV accepting 'unreasonable' risks, which it transferred directly to the construction sub-contractor. Ultimately this could have had disastrous consequences for the project.

Glossary

BAFO	Best and final offer
BBO	Buy build operate
BCIS	Building Cost Information Service
BMCIS	Building Maintenance Cost Information Service
BOO	Build own operate
BOOT	Build own operate transfer
BOT	Build operate transfer
CPO	Compulsory purchase order
CSF	Critical success factors
DBFO	Design build finance operate
EFL	External financing limit
GMP	Guaranteed maximum price
GSA	General settlement agreement
HMPS	Her Majesty's Prison Service
HOT	Honest, open, trustworthy
HRA	Human Rights Act (1998)
ITN	Intention to negotiate
IRR	Internal rate of return
JSCSC	Joint Services Command and Staff College
JV	Joint venture
LDO	Lease develop operate
LU	London Underground
MoD	Ministry of Defence
MERA	Multiple estimating risk analysis
NAO	National Audit Office
NEDC	National Economic Development Council
OECD	Organisation for Economic Cooperation and Development
OGC	Office of Government Commerce
OJEC	Official Journal of the European Community
PA	Project agreement
PFI	Private Finance Initiative
PFU	Private Finance Unit (of OGC)
PPP	Public Private Partnerships
4Ps	PPPP – Public Private Partnerships Programme
PRG	Project Review Group
PSBR	Public sector borrowing requirement
PSC	Public sector comparator
PTU	Permit to use
QS	Quantity surveyor
RICS	Royal Institution of Chartered Surveyors
SLEEPT	Social, legal, economic, environmental, political, technological
SME	Small and medium-sized enterprise
SoPC	Standardisation of PFI Contracts
SPV	Special purpose vehicle
VFM	Value for money
WLCC	Whole life cycle cost

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